

# Contents

<b>Introduction</b>	<b>5</b>
If you have a Windows computer you need one of our Windows courses	5
Feedback.....	13
Problem resolution .....	13
Typographical Conventions Used in This Book .....	14
<b>Putting the Smart Method to Work</b>	<b>16</b>
The Excel and Windows versions that were used to write this book .....	16
Sessions and lessons .....	16
Read the book from beginning to end.....	16
How this book avoids wasting your time .....	17
Why our classroom courses work so well .....	17
How this book mimics our classroom technique .....	17
Avoiding repetition .....	18
Use of American English .....	18
Incremental sample files .....	18
First page of a session.....	19
Every lesson is presented on two facing pages.....	20
Learning by participation .....	21
<b>Session One: Tables, and Ranges</b>	<b>23</b>
Session Objectives .....	23
Lesson 1-1: Configure your mouse and display ribbon group names .....	24
Lesson 1-2: Understand update models .....	26
Lesson 1-3: Check that your Excel version is up to date .....	28
Lesson 1-4: Change the Office Theme.....	30
Lesson 1-5: Apply a simple filter to a range.....	32
Lesson 1-6: Apply a top 10 and custom filter to a range .....	34
Lesson 1-7: Apply an advanced filter with multiple OR criteria .....	36
Lesson 1-8: Apply an advanced filter with complex criteria .....	38
Lesson 1-9: Apply an advanced filter with function-driven criteria .....	40
Lesson 1-10: Extract unique records using an advanced filter .....	42
Lesson 1-11: Convert a range into a table and add a total row .....	44
Lesson 1-12: Format a table using table styles and convert a table into a range.....	46
Lesson 1-13: Create a custom table style .....	48
Lesson 1-14: Sort a range or table by rows .....	50
Lesson 1-15: Sort a range by columns.....	52
Lesson 1-16: Sort a range or table by custom list.....	54

Lesson 1-17: Name a table and create an automatic structured table reference.....	56
Lesson 1-18: Create a manual structured table reference .....	58
Lesson 1-19: Use special items in structured table references .....	60
Lesson 1-20: Understand unqualified structured table references.....	62
Session 1: Exercise .....	65
Session 1: Exercise Answers .....	67

## **Session Two: Data Integrity, Subtotals and Validations**

**69**

Session Objectives .....	69
Lesson 2-1: Split fixed width data using Text to Columns.....	70
Lesson 2-2: Split delimited data using Text to Columns .....	72
Fixed width data .....	72
Delimited data .....	72
Lesson 2-3: Automatically subtotal a range .....	74
Lesson 2-4: Create nested subtotals.....	76
Lesson 2-5: Consolidate data from multiple data ranges .....	78
Lesson 2-6: Use data consolidation to generate quick subtotals from tables.....	80
Lesson 2-7: Validate numerical data .....	82
Lesson 2-8: Create user-friendly messages for validation errors .....	84
Lesson 2-9: Create data validation input messages.....	86
Lesson 2-10: Add a formula-driven date validation and a text length validation .....	88
Lesson 2-11: Add a table-based dynamic list validation .....	90
Lesson 2-12: Use a formula-driven custom validation to enforce complex business rules .....	92
Lesson 2-13: Remove duplicate values from a table .....	94
Lesson 2-14: Use a custom validation to add a unique constraint to a column .....	96
Session 2: Exercise .....	99
Session 2: Exercise Answers .....	101

## **Session Three: Advanced Functions**

**103**

Session Objectives .....	103
Lesson 3-1: Understand precedence rules .....	104
Lesson 3-2: Use common functions with Formula AutoComplete .....	106
Lesson 3-3: Use the Formula Builder task pane and the PMT function .....	108
Lesson 3-4: Use the PV and FV functions to value investments.....	110
Present Value .....	110
Future Value .....	110
Lesson 3-5: Use the IF logic function.....	112
Lesson 3-6: Use the SUMIF and COUNTIF functions to create conditional totals .....	114
Lesson 3-7: Understand date serial numbers .....	116
Lesson 3-8: Understand common date functions .....	118
Lesson 3-9: Use the DATEDIF function .....	120

Lesson 3-10: Use date offsets to manage projects using the scheduling equation.....	122
Lesson 3-11: Use the DATE function to offset days, months and years.....	124
Lesson 3-12: Enter time values and perform basic time calculations .....	126
Lesson 3-13: Perform time calculations that span midnight.....	128
Lesson 3-14: Understand common time functions and convert date serial numbers to decimal values....	130
Lesson 3-15: Use the TIME function to offset hours, minutes and seconds .....	132
Lesson 3-16: Use the AND and OR functions to construct complex Boolean criteria.....	134
Lesson 3-17: Understand calculation options (manual and automatic) .....	136
Lesson 3-18: Concatenate strings using the concatenation operator (&) .....	139
About strings .....	139
The concatenation operator (&) .....	139
Lesson 3-19: Use the TEXT function to format numerical values as strings.....	141
Custom format strings recap .....	141
Lesson 3-20: Extract text from fixed width strings using the LEFT, RIGHT and MID functions .....	143
Lesson 3-21: Extract text from delimited strings using the FIND and LEN functions.....	145
Lesson 3-22: Use a VLOOKUP function for an exact lookup .....	147
Lesson 3-23: Use an IFERROR function to suppress error messages .....	149
Lesson 3-24: Use a VLOOKUP function for an inexact lookup .....	151
Lesson 3-25: Use a MATCH function for an exact lookup .....	153
Lesson 3-26: Use the INDEX function.....	155
Session 3: Exercise.....	157
Session 3: Exercise Answers .....	159

## **Session Four: Using Names and the Formula Auditing Tools**

**161**

Session Objectives .....	161
Lesson 4-1: Automatically create single-cell range names.....	162
Lesson 4-2: Manually create single cell range names and named constants .....	164
Lesson 4-3: Use range names to make formulas more readable .....	166
Lesson 4-4: Automatically create range names in two dimensions .....	168
Lesson 4-5: Use intersection range names and the INDIRECT function.....	170
Lesson 4-6: Create dynamic formula-based range names using the OFFSET function .....	172
Lesson 4-7: Create table-based dynamic range names .....	175
Lesson 4-8: Create two linked drop-down lists using range names .....	177
Lesson 4-9: Understand the #NUM!, #DIV/0! and #NAME? error values .....	179
Lesson 4-10: Understand the #VALUE!, #REF! and #NULL! error values.....	181
Lesson 4-11: Understand background error checking and error checking rules .....	183
Lesson 4-12: Manually check a worksheet for errors.....	185
Lesson 4-13: Audit a formula by tracing precedents .....	187
Lesson 4-14: Audit a formula by tracing dependents.....	189
Session 4: Exercise.....	191

Session 4: Exercise Answers .....	193
<b>Session Five: What If Analysis and Security</b>	<b>195</b>
Session Objectives .....	195
Lesson 5-1: Create a single-input data table.....	196
Lesson 5-2: Create a two-input data table .....	198
Lesson 5-3: Define scenarios.....	200
Lesson 5-4: Create a scenario summary report.....	202
Lesson 5-5: Use Goal Seek .....	204
Lesson 5-6: Use Solver.....	206
What is Solver? .....	206
Lesson 5-7: Hide and unhide worksheets, columns and rows .....	208
Lesson 5-8: Create custom views .....	210
Lesson 5-9: Prevent unauthorized users from opening or modifying workbooks .....	212
Lesson 5-10: Control the changes users can make to workbooks .....	214
Lesson 5-11: Restrict the cells users are allowed to change .....	216
Session 5: Exercise .....	219
Session 5: Exercise Answers .....	221
<b>Session Six: Working with Hyperlinks, Other Applications and Workgroups</b>	<b>223</b>
Session Objectives .....	223
Lesson 6-1: Hyperlink to worksheets and ranges.....	224
Lesson 6-2: Hyperlink to other workbooks and the Internet .....	226
Lesson 6-3: Embed an Excel worksheet object into a Word document .....	228
Lesson 6-4: Link an Excel worksheet to a Word document .....	230
Lesson 6-5: Embed an Excel chart object into a Word document.....	232
Lesson 6-6: Understand the three different ways to share a workbook .....	234
The lock method .....	234
The merge method .....	234
Sharing workbooks on a network .....	235
Lesson 6-7: Share a workbook using the lock method.....	236
Lesson 6-8: Share a workbook using the merge method .....	238
Lesson 6-9: Share a workbook on a network.....	240
Lesson 6-10: Accept and reject changes to shared workbooks .....	242
Session 6: Exercise .....	245
Session 6: Exercise Answers .....	247
<b>Session Seven: Forms and Macros</b>	<b>249</b>
Session Objectives .....	249
Lesson 7-1: Add group box and option button controls to a worksheet form .....	250
Lesson 7-2: Add a combo box control to a worksheet form.....	252
Lesson 7-3: Set form control cell links.....	254

Lesson 7-4: Connect result cells to a form .....	256
Lesson 7-5: Add a check box control to a worksheet form .....	258
Lesson 7-6: Use check box data in result cells.....	260
Lesson 7-7: Add a temperature gauge chart to a form .....	262
Lesson 7-8: Add a single input data table to a form .....	264
Lesson 7-9: Improve form appearance and usability.....	266
Lesson 7-10: Understand macros and VBA.....	268
Macros record keystrokes and mouse-clicks.....	268
Lesson 7-11: Record a macro .....	270
Lesson 7-12: Understand macro security .....	272
Why is security needed? .....	272
The Excel Workbook and Excel Macro-Enabled Workbook formats.....	272
Opening a macro enabled workbook.....	272
Lesson 7-13: Use shapes to run macros .....	274
Lesson 7-14: Run a macro from a button control .....	276
Lesson 7-15: Show and hide ribbon tabs .....	278
Lesson 7-16: Add custom groups to standard ribbon tabs .....	280
Lesson 7-17: Create a custom ribbon tab .....	282
Session 7: Exercise .....	285
Session 7: Exercise Answers .....	287

## Session Eight: Pivot Tables

**289**

Session Objectives .....	289
Lesson 8-1: Create a one dimensional pivot table report from a table .....	290
Lesson 8-2: Create a grouped pivot table report .....	292
Lesson 8-3: Understand pivot table rows and columns .....	294
Lesson 8-4: Understand the pivot table data cache.....	296
Lesson 8-5: Apply a simple filter and sort to a pivot table .....	298
Lesson 8-6: Use report filter fields.....	300
Lesson 8-7: Filter a pivot table visually using slicers.....	302
Lesson 8-8: Use slicers to create a custom timeline.....	304
Lesson 8-9: Use report filter fields to automatically create multiple pages.....	306
Lesson 8-10: Format a pivot table using pivot table styles.....	308
Lesson 8-11: Create a custom pivot table style .....	310
Lesson 8-12: Understand pivot table report layouts.....	312
Lesson 8-13: Add/remove subtotals and apply cell styles to pivot table fields .....	314
Lesson 8-14: Display multiple summations within a single pivot table .....	316
Lesson 8-15: Add a calculated field to a pivot table .....	318
Lesson 8-16: Add a calculated item to a pivot table.....	320
Lesson 8-17: Group by text.....	322

Lesson 8-18: Group by date .....	324
Lesson 8-19: Group by numeric value ranges.....	326
Lesson 8-20: Show row data by percentage of total rather than value .....	328
Lesson 8-21: Use pivot table values in simple formulas.....	330
Lesson 8-22: Use the GETPIVOTDATA function .....	332
Lesson 8-23: Embed multiple pivot tables into a worksheet .....	334
Lesson 8-24: Use slicers to filter multiple pivot tables.....	336
Session 8: Exercise .....	339
Session 8: Exercise Answers .....	341

## **Appendix A: Differences between the Windows and Mac versions of Excel 2016 343**

Additional features available in Excel 2016 for Windows .....	344
Features that behave differently in Excel 2016 for Windows .....	349

## **Appendix B: Skills Covered in the Essential Skills Course 353**

Essential skills course outline.....	354
Session 1 .....	354
Session 2 .....	354
Session 3 .....	355
Session 4 .....	355
Session 5 .....	356
Session 6 .....	357
Session 7 .....	357
Session 8 .....	357

## **Index 359**