VALUABLE COMPANION WEBSITE WRITTEN BY JOHN WALKENBACH

# Excel 2013 BIBLE

# THE COMPREHENSIVE TUTORIAL RESOURCE

MASTER EXCEL FORMULAS FOR USEFUL WORKSHEETS CREATE COMPELLING
CHARTS AND DIAGRAMS

ANALYZE AND PRESENT DATA WITH PIVOT TABLES

WRITTEN BY

# Microsoft<sup>®</sup> Excel 2013

# THE COMPREHENSIVE TUTORIAL RESOURCE

FOR USEFUL WORKSHEETS CHARTS AND DIAGRAMS

MASTER EXCEL FORMULAS | CREATE COMPELLING

ANALYZE AND PRESENT DATA WITH PIVOT TABLES

# Excel<sup>®</sup> 2013 Bible

# **Table of Contents**

÷	-			-					
	[n]	to	rc	$\mathbf{C}$	lı:		ידי		n
J	ш	L.	LU	JU	LL	L	, LJ	LU	'11

# Part I: Getting Started with Excel

# **Chapter 1: Introducing Excel**

**Identifying What Excel Is Good For** 

Seeing What's New in Excel 2013

<u>Understanding Workbooks and Worksheets</u>

Moving Around a Worksheet

Navigating with your keyboard

Navigating with your mouse

Using the Ribbon

Ribbon tabs

Contextual tabs

Types of commands on the Ribbon

Accessing the Ribbon by using your keyboard

<u>Using Shortcut Menus</u>

Customizing Your Quick Access Toolbar

Working with Dialog Boxes

Navigating dialog boxes

<u>Using tabbed dialog boxes</u>

**Using Task Panes** 

# Creating Your First Excel Workbook

Getting started on your worksheet

Filling in the month names

Entering the sales data

Formatting the numbers

Making your worksheet look a bit fancier

Summing the values

Creating a chart

Printing your worksheet

Saving your workbook

# **Chapter 2: Entering and Editing Worksheet Data**

# **Exploring Data Types**

Numeric values

<u>Text entries</u>

Formulas

**Entering Text and Values into Your Worksheets** 

**Entering Dates and Times into Your Worksheets** 

Entering date values

Entering time values

**Modifying Cell Contents** 

Deleting the contents of a cell

Replacing the contents of a cell

Editing the contents of a cell

Learning some handy data-entry techniques

Applying Number Formatting

Using automatic number formatting

Formatting numbers by using the Ribbon

<u>Using shortcut keys to format numbers</u>

Formatting numbers using the Format Cells dialog box

Adding your own custom number formats

# **Chapter 3: Essential Worksheet Operations**

# **Learning the Fundamentals of Excel Worksheets**

Working with Excel windows

Activating a worksheet

Adding a new worksheet to your workbook

Deleting a worksheet you no longer need

Changing the name of a worksheet

Changing a sheet tab color

Rearranging your worksheets

Hiding and unhiding a worksheet

# <u>Controlling the Worksheet View</u>

Zooming in or out for a better view

Viewing a worksheet in multiple windows

Comparing sheets side by side

Splitting the worksheet window into panes

Keeping the titles in view by freezing panes

Monitoring cells with a Watch Window

# Working with Rows and Columns

**Inserting rows and columns** 

**Deleting rows and columns** 

Hiding rows and columns

Changing column widths and row heights

# <u>Chapter 4: Working with Cells and Ranges</u>

<del></del>
<u>Understanding Cells and Ranges</u>
Selecting ranges
Selecting complete rows and columns
Selecting noncontiguous ranges
Selecting multisheet ranges
Selecting special types of cells
Selecting cells by searching
Copying or Moving Ranges
Copying by using Ribbon commands
Copying by using shortcut menu commands
Copying by using shortcut keys
Copying or moving by using drag-and-drop
Copying to adjacent cells
Copying a range to other sheets
<u>Using the Office Clipboard to paste</u>
Pasting in special ways
<u>Using the Paste Special dialog box</u>
<u>Using Names to Work with Ranges</u>
Creating range names in your workbooks
Managing names
Adding Comments to Cells
Formatting comments
Changing a comment's shape
Reading comments

<u>Printing comments</u>

Hiding and showing comments

<u>Selecting comments</u>

**Editing comments** 

**Deleting comments** 

# **Chapter 5: Introducing Tables**

What Is a Table?

<u>Creating a Table</u>

Changing the Look of a Table

Working with Tables

Navigating in a table

Selecting parts of a table

Adding new rows or columns

**Deleting rows or columns** 

Moving a table

Working with the Total Row

Removing duplicate rows from a table

Sorting and filtering a table

Converting a table back to a range

# <u>Chapter 6: Worksheet Formatting</u>

**Getting to Know the Formatting Tools** 

Using the formatting tools on the Home tab

Using the Mini toolbar

Using the Format Cells dialog box

Using Different Fonts to Format Your Worksheet

**Changing Text Alignment** 

**Choosing horizontal alignment options** 

Choosing vertical alignment options

Wrapping or shrinking text to fit the cell

Merging worksheet cells to create additional text space

Displaying text at an angle

Controlling the text direction

**Using Colors and Shading** 

**Adding Borders and Lines** 

Adding a Background Image to a Worksheet

<u>Using Named Styles for Easier Formatting</u>

**Applying styles** 

Modifying an existing style

<u>Creating new styles</u>

Merging styles from other workbooks

Controlling styles with templates

**Understanding Document Themes** 

<u>Applying a theme</u>

<u>Customizing a theme</u>

# **Chapter 7: Understanding Excel Files**

Creating a New Workbook

Opening an Existing Workbook

Filtering filenames

Choosing your file display preferences

Saving a Workbook

**Using AutoRecover** 

Recovering versions of the current workbook

Recovering unsaved work

**Configuring AutoRecover** 

Password-Protecting a Workbook

Organizing Your Files

Other Workbook Info Options

**Protect Workbook options** 

**Check for Issues options** 

**Compatibility Mode section** 

**Closing Workbooks** 

Safeguarding Your Work

**Excel File Compatibility** 

**Checking compatibility** 

Recognizing the Excel 2013 file formats

Saving a file for use with an older version of Excel

# **Chapter 8: Using and Creating Templates**

<u>Exploring Excel Templates</u>

Viewing templates

Creating a workbook from a template

Modifying a template

**Understanding Custom Excel Templates** 

Working with the default templates

<u>Creating custom templates</u>

# **Chapter 9: Printing Your Work**

**Basic Printing** 

**Changing Your Page View** 

Normal view Page Layout view Page Break Preview Adjusting Common Page Setup Settings Choosing your printer Specifying what you want to print Changing page orientation Specifying paper size Printing multiple copies of a report Adjusting the page margins Understanding page breaks Printing row and column titles Scaling printed output Printing cell gridlines Printing row and column headers <u>Using a background image</u> Adding a Header or Footer to Your Reports Selecting a predefined header or footer Understanding header and footer element codes Other header and footer options Copying Page Setup Settings across Sheets Preventing Certain Cells from Being Printed Preventing Objects from Being Printed <u>Creating Custom Views of Your Worksheet</u> **Creating PDF files** 

Part II: Working with Formulas and Functions

# **Chapter 10: Introducing Formulas and Functions**

Und	lerstar	nding	Formul	<u>a Basics</u>

<u>Using operators in formulas</u>

<u>Understanding operator precedence in formulas</u>

<u>Using functions in your formulas</u>

#### **Entering Formulas into Your Worksheets**

**Entering formulas manually** 

Entering formulas by pointing

Pasting range names into formulas

<u>Inserting functions into formulas</u>

Function entry tips

#### **Editing Formulas**

#### <u>Using Cell References in Formulas</u>

Using relative, absolute, and mixed references

Changing the types of your references

Referencing cells outside the worksheet

# <u>Using Formulas in Tables</u>

Summarizing data in a table

Using formulas within a table

Referencing data in a table

# **Correcting Common Formula Errors**

Handling circular references

Specifying when formulas are calculated

# <u>Using Advanced Naming Techniques</u>

<u>Using names for constants</u>

<u>Using names for formulas</u>

TT .			
Leina	rango	intorcoc	tione
USIIIU	Tanuc	<u>intersec</u>	monto

Applying names to existing references

#### **Working with Formulas**

Not hard-coding values

Using the Formula bar as a calculator

Making an exact copy of a formula

Converting formulas to values

# **Chapter 11: Creating Formulas That Manipulate Text**

#### A Few Words about Text

#### **Text Functions**

Working with character codes

Determining whether two strings are identical

Joining two or more cells

<u>Displaying formatted values as text</u>

<u>Displaying formatted currency values as text</u>

Repeating a character or string

<u>Creating a text histogram</u>

<u>Padding a number</u>

Removing excess spaces and nonprinting characters

Counting characters in a string

<u>Changing the case of text</u>

Extracting characters from a string

Replacing text with other text

Finding and searching within a string

Searching and replacing within a string

#### **Advanced Text Formulas**

<b>Counting</b>	specific	character	rs in	a	cell

Counting the occurrences of a substring in a cell

Extracting the first word of a string

Extracting the last word of a string

Extracting all but the first word of a string

Extracting first names, middle names, and last names

Removing titles from names

Creating an ordinal number

Counting the number of words in a cell

# Chapter 12: Working with Dates and Times

#### How Excel Handles Dates and Times

<u>Understanding date serial numbers</u>

**Entering dates** 

<u>Understanding time serial numbers</u>

**Entering times** 

Formatting dates and times

Problems with dates

#### **Date-Related Worksheet Functions**

Displaying the current date

<u>Displaying any date</u>

Generating a series of dates

<u>Converting a nondate string to a date</u>

<u>Calculating the number of days between two dates</u>

Calculating the number of workdays between two dates

Offsetting a date using only workdays

Calculating the number of years between two dates

<u>Calculatii</u>	<u>ng a</u>	person	<u>'s age</u>	e
-------------------	-------------	--------	---------------	---

Determining the day of the year

Determining the day of the week

Determining the week of the year

Determining the date of the most recent Sunday

Determining the first day of the week after a date

Determining the nth occurrence of a day of the week in a month

Calculating dates of holidays

Determining the last day of a month

Determining whether a year is a leap year

Determining a date's quarter

#### Time-Related Functions

Displaying the current time

<u>Displaying any time</u>

Calculating the difference between two times

Summing times that exceed 24 hours

Converting from military time

Converting decimal hours, minutes, or seconds to a time

Adding hours, minutes, or seconds to a time

Rounding time values

Working with non-time-of-day values

# <u>Chapter 13: Creating Formulas That Count and Sum</u>

**Counting and Summing Worksheet Cells** 

**Basic Counting Formulas** 

Counting the total number of cells

Counting blank cells

Counting nonblank cells Counting numeric cells Counting text cells Counting nontext cells Counting logical values Counting error values in a range **Advanced Counting Formulas** Counting cells by using the COUNTIF function Counting cells based on multiple criteria Counting the most frequently occurring entry Counting the occurrences of specific text Counting the number of unique values Creating a frequency distribution **Summing Formulas** Summing all cells in a range Computing a cumulative sum Ignoring errors when summing Summing the "top n" values Conditional Sums Using a Single Criterion Summing only negative values Summing values based on a different range Summing values based on a text comparison Summing values based on a date comparison Conditional Sums Using Multiple Criteria Using And criteria <u>Using Or criteria</u>

# Using And and Or criteria

# Chapter 14: Creating Formulas That Look Up Values

**Introducing Lookup Formulas** 

Functions Relevant to Lookups

Basic Lookup Formulas

The VLOOKUP function

The HLOOKUP function

The LOOKUP function

Combining the MATCH and INDEX functions

**Specialized Lookup Formulas** 

Looking up an exact value

Looking up a value to the left

Performing a case-sensitive lookup

Looking up a value from multiple lookup tables

Determining letter grades for test scores

Calculating a grade-point average

Performing a two-way lookup

Performing a two-column lookup

Determining the cell address of a value within a range

Looking up a value by using the closest match

# <u>Chapter 15: Creating Formulas for Financial</u> <u>Applications</u>

The Time Value of Money

**Loan Calculations** 

Worksheet functions for calculating loan information

A loan calculation example	$\mathbf{A}$	loan	cal	lcu]	lation	examp	le
----------------------------	--------------	------	-----	------	--------	-------	----

Credit card payments

Creating a loan amortization schedule

Summarizing loan options by using a data table

Calculating a loan with irregular payments

#### **Investment Calculations**

Future value of a single deposit

Future value of a series of deposits

**Depreciation Calculations** 

# **Chapter 16: Miscellaneous Calculations**

#### **Unit Conversions**

Solving Right Triangles

Area, Surface, Circumference, and Volume Calculations

Calculating the area and perimeter of a square

Calculating the area and perimeter of a rectangle

Calculating the area and perimeter of a circle

Calculating the area of a trapezoid

Calculating the area of a triangle

Calculating the surface and volume of a sphere

Calculating the surface and volume of a cube

Calculating the surface and volume of a rectangular solid

Calculating the surface and volume of a cone

Calculating the volume of a cylinder

Calculating the volume of a pyramid

# Rounding Numbers

Basic rounding formulas

rtouriding to the hearton main pre	Rounding	to the	nearest	multi	ple
------------------------------------	----------	--------	---------	-------	-----

Rounding currency values

Working with fractional dollars

**Using the INT and TRUNC functions** 

Rounding to an even or odd integer

Rounding to n significant digits

# **Chapter 17: Introducing Array Formulas**

#### **Understanding Array Formulas**

A multicell array formula

A single-cell array formula

**Creating an Array Constant** 

# <u>Understanding the Dimensions of an Array</u>

One-dimensional horizontal arrays

One-dimensional vertical arrays

Two-dimensional arrays

Naming Array Constants

Working with Array Formulas

Entering an array formula

Selecting an array formula range

Editing an array formula

Expanding or contracting a multicell array formula

# <u>Using Multicell Array Formulas</u>

 $\underline{Creating\ an\ array\ from\ values\ in\ a\ range}$ 

Creating an array constant from values in a range

Performing operations on an array

Using functions with an array

Transi	<u>posing</u>	an	array	7
				-

Generating an array of consecutive integers

# <u>Using Single-Cell Array Formulas</u>

Counting characters in a range

Summing the three smallest values in a range

Counting text cells in a range

Eliminating intermediate formulas

Using an array in lieu of a range reference

# Chapter 18: Performing Magic with Array Formulas

# Working with Single-Cell Array Formulas

Summing a range that contains errors

Counting the number of error values in a range

Summing the n largest values in a range

Computing an average that excludes zeros

Determining whether a particular value appears in a range

 $\underline{Counting\ the\ number\ of\ differences\ in\ two\ ranges}$ 

Returning the location of the maximum value in a range

Finding the row of a value's nth occurrence in a range

Returning the longest text in a range

<u>Determining whether a range contains valid values</u>

Summing the digits of an integer

Summing rounded values

Summing every nth value in a range

Removing nonnumeric characters from a string

Determining the closest value in a range

Returning the last value in a column

<u>Returning</u>	the	<u>last</u>	val	lue	in	a	row

# Working with Multicell Array Formulas

Returning only positive values from a range

Returning nonblank cells from a range

Reversing the order of cells in a range

Sorting a range of values dynamically

Returning a list of unique items in a range

Displaying a calendar in a range

# Part III: Creating Charts and Graphics

# **Chapter 19: Getting Started Making Charts**

What Is a Chart?

<u>Understanding How Excel Handles Charts</u>

**Embedded charts** 

Chart sheets

Creating a Chart

Hands On: Creating and Customizing a Chart

Selecting the data

Choosing a chart type

**Experimenting with different styles** 

**Experimenting with different layouts** 

Trying another view of the data

Trying other chart types

**Working with Charts** 

Resizing a chart

Moving a chart

```
Copying a chart
    Deleting a chart
    Adding chart elements
    Moving and deleting chart elements
    Formatting chart elements
    Printing charts
 <u>Understanding Chart Types</u>
    Choosing a chart type
    Column charts
    Bar charts
    Line charts
    Pie charts
    XY (scatter) charts
    Area charts
    Radar charts
    Surface charts
    Bubble charts
    Stock charts
 Learning More
Chapter 20: Learning Advanced Charting
 Selecting Chart Elements
    Selecting with the mouse
    Selecting with the keyboard
    Selecting with the Chart Element control
```

<u>User Interface Choices for Modifying Chart Elements</u>

<u>Using the Format task pane</u>

<u>Using the chart customization buttons</u> <u>Using the Ribbon</u> Using the Mini toolbar Modifying the Chart Area Modifying the Plot Area Working with Titles in a Chart Working with a Legend **Working with Gridlines** Modifying the Axes Value axis Category axis Working with Data Series Deleting or hiding a data series Adding a new data series to a chart Changing data used by a series Displaying data labels in a chart Handling missing data Adding error bars Adding a trendline Modifying 3-D charts <u>Creating combination charts</u> Displaying a data table **Creating Chart Templates** <u>Learning Some Chart-Making Tricks</u>

<u>Creating picture charts</u>

<u>Creating a thermometer chart</u>

Creating	g a c	rauge	chart

Displaying conditional colors in a column chart

<u>Creating a comparative histogram</u>

Creating a Gantt chart

Plotting mathematical functions with one variable

Plotting mathematical functions with two variables

# <u>Chapter 21: Visualizing Data Using Conditional</u> <u>Formatting</u>

**About Conditional Formatting** 

**Specifying Conditional Formatting** 

Formatting types you can apply

Making your own rules

#### **Conditional Formats That Use Graphics**

Using data bars

<u>Using color scales</u>

Using icon sets

# **Creating Formula-Based Rules**

<u>Understanding relative and absolute references</u>

Conditional formatting formula examples

# Working with Conditional Formats

Managing rules

Copying cells that contain conditional formatting

**Deleting conditional formatting** 

Locating cells that contain conditional formatting

# **Chapter 22: Creating Sparkline Graphics**

```
Sparkline Types
Creating Sparklines
Customizing Sparklines
Sizing Sparkline cells
Handling hidden or missing data
Changing the Sparkline type
Changing Sparkline colors and line width
Highlighting certain data points
Adjusting Sparkline axis scaling
Faking a reference line
Specifying a Date Axis
Auto-Updating Sparklines
```

Displaying a Sparkline for a Dynamic Range

# <u>Chapter 23: Enhancing Your Work with Pictures and Drawings</u>

```
Using Shapes
Inserting a Shape
Adding text to a Shape
Formatting Shapes
Stacking Shapes
Grouping objects
Aligning and spacing objects
Reshaping Shapes
Printing objects
Using SmartArt
```

**Inserting SmartArt** 

**Customizing SmartArt** 

Changing the layout

Changing the style

Learning more about SmartArt

**Using WordArt** 

Working with Other Graphic Types

About graphics files

<u>Inserting screenshots</u>

Displaying a worksheet background image

<u>Using the Equation Editor</u>

# Part IV: Using Advanced Excel Features

# Chapter 24: Customizing the Excel User Interface

<u>Customizing the Quick Access Toolbar</u>

About the Quick Access toolbar

Adding new commands to the Quick Access toolbar

Other Quick Access toolbar actions

Customizing the Ribbon

Why you may want to customize the Ribbon

What can be customized

How to customize the Ribbon

Resetting the Ribbon

# Chapter 25: Using Custom Number Formats

**About Number Formatting** 

Automatic number formatting

Formatting numbers by using the Ribbon

	Using s	<u>hortcut</u> l	<u>keys</u>	to	<b>format</b>	num	bers
--	---------	------------------	-------------	----	---------------	-----	------

<u>Using the Format Cells dialog box to format numbers</u>

#### Creating a Custom Number Format

Parts of a number format string

Custom number format codes

# **Custom Number Format Examples**

**Scaling values** 

**Displaying leading zeros** 

**Specifying conditions** 

**Displaying fractions** 

Displaying a negative sign on the right

Formatting dates and times

<u>Displaying text with numbers</u>

Suppressing certain types of entries

Filling a cell with a repeating character

# **Chapter 26: Using Data Validation**

**About Data Validation** 

Specifying Validation Criteria

Types of Validation Criteria You Can Apply

<u>Creating a Drop-Down List</u>

<u>Using Formulas for Data Validation Rules</u>

<u>Understanding Cell References</u>

**Data Validation Formula Examples** 

Accepting text only

Accepting a larger value than the previous cell

Accepting nonduplicate entries only

Accepting text that begins with a specific character

Accepting dates by the day of the week

Accepting only values that don't exceed a total

Creating a dependent list

# <u>Chapter 27: Creating and Using Worksheet Outlines</u>

**Introducing Worksheet Outlines** 

Creating an Outline

Preparing the data

<u>Creating an outline automatically</u>

Creating an outline manually

Working with Outlines

**Displaying levels** 

Adding data to an outline

Removing an outline

Adjusting the outline symbols

Hiding the outline symbols

# Chapter 28: Linking and Consolidating Worksheets

**Linking Workbooks** 

**Creating External Reference Formulas** 

<u>Understanding link formula syntax</u>

Creating a link formula by pointing

Pasting links

Working with External Reference Formulas

Creating links to unsaved workbooks

Opening a workbook with external reference formulas

```
Changing the startup prompt
    <u>Updating links</u>
    Changing the link source
    Severing links
 Avoiding Potential Problems with External Reference Formulas
    Renaming or moving a source workbook
    <u>Using the Save As command</u>
    Modifying a source workbook
    Intermediary links
 Consolidating Worksheets
    Consolidating worksheets by using formulas
    Consolidating worksheets by using Paste Special
    Consolidating worksheets by using the Consolidate dialog box
    A workbook consolidation example
    Refreshing a consolidation
    More about consolidation
Chapter 29: Excel and the Internet
 Saving a Workbook on the Internet
 Saving Workbooks in HTML Format
    Creating an HTML file
    Creating a single-file web page
 Opening an HTML File
 Working with Hyperlinks
    <u>Inserting a hyperlink</u>
    Using hyperlinks
```

**Using Web Queries** 

#### **E-Mail Features**

# **Chapter 30: Protecting Your Work**

**Types of Protection** 

Protecting a Worksheet

<u>Unlocking cells</u>

**Sheet protection options** 

Assigning user permissions

Protecting a Workbook

Requiring a password to open a workbook

Protecting a workbook's structure

**VB Project Protection** 

**Related Topics** 

Saving a worksheet as a PDF file

Marking a workbook final

Inspecting a workbook

<u>Using a digital signature</u>

# Chapter 31: Making Your Worksheets Error Free

Finding and Correcting Formula Errors

Mismatched parentheses

Cells are filled with hash marks

Blank cells are not blank

Extra space characters

<u>Formulas returning an error</u>

Absolute/relative reference problems

Operator precedence problems

Formulas are not calculated

Actual versus displayed values

Floating point number errors

"Phantom link" errors

**Using Excel Auditing Tools** 

<u>Identifying cells of a particular type</u>

Viewing formulas

Tracing cell relationships

<u>Tracing error values</u>

Fixing circular reference errors

Using the background error-checking feature

<u>Using Formula Evaluator</u>

Searching and Replacing

Searching for information

Replacing information

Searching for formatting

**Spell-Checking Your Worksheets** 

**Using AutoCorrect** 

# Part V: Analyzing Data with Excel

# Chapter 32: Importing and Cleaning Data

<u>Importing Data</u>

<u>Importing from a file</u>

<u>Importing a text file into a specified range</u>

<u>Copying and pasting data</u>

Data Clean-up Techniques