

# Lesson Notes for Microsoft Excel

## Lesson 3: Using Formulas

Slide	Topic/Exercise Heading	Obj	Instructor Notes	Timing (mins)
	The Microsoft Office Specialist Exam Objectives listed at the right are covered in this lesson.	<b>1.4.6</b> <b>4.1.1</b> <b>4.2.1</b> <b>4.2.2</b> <b>4.2.3</b> <b>4.3.1</b> <b>4.3.2</b> <b>4.3.3</b>	<b>Display formulas</b> <b>Insert relative, absolute and mixed references</b> <b>Perform calculations by using the AVERAGE(), MAX(), MIN(), and SUM() functions</b> <b>Count cells by using the COUNT(), COUNTA(), and COUNTBLANK() functions</b> <b>Perform conditional operations by using the IF() function</b> <b>Format text by using RIGHT(), LEFT(), and MID() functions</b> <b>Format text by using UPPER(), LOWER(), and LEN() functions</b> <b>Format text by using the CONCAT() and TEXTJOIN() functions</b>	
3	Lesson Objectives		<p>Review the objectives on Slide 3 with students so they know what will be covered in the lesson.</p> <p>This lesson is typically the most challenging for students because it requires the use of prior mathematical skills/knowledge.</p> <p>For students seeking Microsoft Office Specialist Certification it may be necessary to review, reteach, and/or provide extra practice before attempting the actual examination.</p>	5-10
	Using Formulas		<p>Explain that any worksheet cell can contain a formula. A formula can perform a calculation based on:</p> <ul style="list-style-type: none"> <li>Numbers entered into the cell</li> <li>Values stored in other cells in the worksheet or workbook</li> </ul>	5-10
4-5	– Creating and Editing Formulas		<p>Students need to understand:</p> <ul style="list-style-type: none"> <li>Formulas must be entered in the cell where they want the results to display.</li> <li>All formulas must begin with an equal sign.</li> <li>Formulas can be copied to other cells.</li> <li>Smart tags can be used to correct formula problems/issues.</li> </ul>	15-30
6	– Cell References	4.1.1	The topic of cell references is easier to understand when demonstrated than when simply explained as an abstract concept.	5-15

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			Demonstrate how to enter a cell reference into a formula, or have students complete the upcoming exercise as you explain it.  Explaining this concept without a visual reference or hands-on activity is rarely effective for student understanding.	
7	– Mathematical Operators		Students should already be familiar with standard mathematical operations. Use Slide 7 for a quick review.	5-15
	<b>Learn to use formulas</b>		Students use some of Excel's formula capabilities.	15-30
8	– Referencing Other Worksheets	4.1.1	Students should understand that a formula can reference cells in other worksheets within the same workbook.  Explain that Excel uses the ! (bang) symbol to indicate that this cell is located in the worksheet whose name appears immediately before the symbol.	5-15
	<b>Learn to reference cells in other worksheets</b>	4.1.1	Students create formulas that reference cells located in other worksheets.	15-30
9-10	Using Math and Statistical Functions		As outlined on Slide 9, explain the difference between functions and formulas: <ul style="list-style-type: none"> <li>• Functions do not need the "=", but formulas must always have one</li> <li>• Functions may be used as part of a formula</li> </ul>	10-15
11	– Using the SUM Function	4.2.1	Demonstrate the ease of using AutoSum and the various ways in which you can insert an AutoSum function, as outlined on Slide 11.	5-15
	<b>Learn to calculate the sum total</b>	4.2.1	Students calculate the sum total of a row and column of numbers.	5-15
12	– Using Statistical Functions	4.2.1 4.2.2	Excel functions are grouped into one of 13 categories.  There are six commonly used statistical functions listed on Slide 12.  Spend a short time reviewing these.	5-20
	<b>Learn to use the statistical functions</b>	4.2.1 4.2.2	Students use several statistical functions.	15-20
13-14	– Using the IF Function	4.2.3	This topic will require a demonstration showing the effects of using the IF Function.  This is a difficult concept for students to grasp without actually seeing it work.	10-20

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	<b>Learn to use the IF function</b>	4.2.3	Students use the IF function and nest a function within another function.	15-20
15	Using Text Functions	4.3.1 4.3.2 4.3.3	Slide 15 describes text functions. This is a difficult concept to grasp without an opportunity for students to practice applying the functions and viewing the results. You may wish to rely on the exercise that follows to help students grasp the concept.	5-20
	<b>Learn to use text functions</b>	4.3.1 4.3.2 4.3.3	Students learn how text functions can be used to change character strings.	5-20
16	Using Absolute and Relative Cell References – Using Absolute Cell References	4.1.1	Demonstrate absolute cell referencing using a simple teacher-created worksheet. Emphasize that the most common way to create an absolute cell reference is to place a \$ (dollar) sign before the row number and the column letter. The upcoming exercise will help students grasp the concept.	10-20
17	– Using Mixed Absolute and Relative Cell References	4.1.1	Cell addresses do not have to include both absolute column and row references. This is another very difficult concept for students to grasp. The following exercise will help students understand the concept.	5-15
	<b>Learn to use absolute cell references</b>	4.1.1	Students use absolute cell references.	15-30
18	Displaying Formulas	1.4.6	Use the steps outlined on Slide 18 to demonstrate how to display formulas in the worksheet.	5-15
	<b>Learn to display formulas</b>	1.4.6	Students display the formulas in worksheet cells and then display the formula results.	5-10
19	Lesson Summary		Review the objectives with students to remind them of what was covered in the lesson. Provide a short summary of the features and give students a chance to complete exercises if they did not complete them earlier.	10-15
			<b>Total (Hours)</b>	<b>3.5-7.0</b>