EXCEL 2013

Working with Formulas and Functions

4

LESSON OUTLINE

Working with Formulas and Functions
Creating Formulas
Using Cell References in Formulas
Modifying and Copying Formulas
Displaying and Printing Formulas
Using Formula AutoComplete
Using Insert Function
Creating Formulas with the IF Function
Concepts Review
Reinforce Your Skills
Apply Your Skills
Extend Your Skills
Transfer Your Skills

LEARNING OBJECTIVES

After studying this lesson, you will be able to:

- Create formulas to calculate values

- Use functions such as sum, average, maximum, minimum, and IF

- Use relative, absolute, and mixed cell references in formulas

- Modify and copy formulas

- Display formulas rather than resulting values in cells

In this lesson, you will create and modify basic formulas and functions in Excel. Formulas are one of Excel's most powerful features, as they can save you time and increase the accuracy of your spreadsheets. You will reference cells in formulas and use AutoSum. Lastly, you will use IF functions, which can flag a cell with a text label, display a value, or perform a calculation when specific criteria are satisfied.

CASE STUDY

Creating a Spreadsheet with Formulas

Green Clean earns revenue by selling janitorial products and contracts for cleaning services. You want to set up a workbook with two worksheets, one to track commissions and the other to report how the projected profit would change based on costs and an increase or decrease in sales.

	A	B	C	D	E	F	G
1				Sales Department			
2				First Quarter Commissions			
3							
4	Sales Team Member	January	February	March	Qtr 1 Total	Sales	Met Goal?
5	Talos Bouras	250	486	415	1151	28775	
6	Leisa Malimali	74	88	101	263	6575	
7	Brian Simpson	389	303	422	1114	27850	
8	Amy Wyatt	346	381	502	1229	30725	Yes
9	Monthly Total	1059	1258	1440	3757		
10							
11	Average	264.75	314.5	360	939.25		
12	Maximum	389	486	502	1229		
13	Minimum	74	88	101	263		
14	Count	4	4	4	4		
15	Goal					30000	

This worksheet sums the monthly totals for all team members as well as the quarterly sales for each.

	A	B	C	D	E
1		Sales Department			
2		Projected Net Profit			
3		Base	2%	5%	-5%
4	Product Sales	$ 53,200	54,264	55,860	50,540
5	Contracts	241,000	245,820	253,050	228,950
6	Total Revenue	$ 294,200	$ 300,084	$ 308,910	$ 279,490
7					
8	Fixed Operating Cost	101,400	101,400	101,400	101,400
9	Marketing Expense	15,000	15,000	15,000	15,000
10	Commissions	27,824	28,380	29,215	26,433
11	Total Costs	$ 144,224	$ 144,780	$ 145,615	$ 142,833
12					
13	Gross Profit	$ 149,976	$ 155,304	$ 163,295	$ 136,657
14	Net Profit	$ 138,353	$ 143,267	$ 150,639	$ 126,066
15	Gross Profit vs. Revenue	51.0%	51.8%	52.9%	48.9%
16					
17	Contracts	482			
18	Average Contract	$ 500	Marketing	$ 15,000	
19	Product Commission Rate	7%	Fixed Cost	$ 101,400	
20	Contract Commission Rate	10%	Tax Rate	7.75%	

This worksheet reports the effect of various sales projections and costs on net profit.

EX04.2

Working with Formulas and Functions

A formula is a math problem done in Excel. You can add, subtract, multiply, divide, and group cell contents to make your data work for you. A function is a prewritten formula that can simplify complex procedures for numbers and text. For instance, a function can be used to sum a group of numbers, to determine the payment amount on a loan, and to convert a number to text.

Using AutoSum to Create a SUM Formula

The AutoSum button automatically sums a column or row of numbers. When you click AutoSum, Excel starts the formula for you by entering =SUM() and proposes a range of adjacent cells within the parentheses. Excel first looks upward for a range to sum. If a range is not found there, it next looks left. You can accept the proposed range, which can be viewed in the Formula Bar, or drag in the worksheet to select a different range.

FROM THE RIBBON
Home→Editing
→AutoSum Σ

FROM THE KEYBOARD
Alt + =

Excel 2013

The Formula Bar displays the formula.

Excel proposes to sum the range B5:B8 and adds a flashing marquee.

The formula is being created in cell B9.

The result displays after you confirm the formula.

Average, Count, CountA, Max, and Min Functions

In addition to summing a group of numbers, the AutoSum button can perform a number of other calculations.

AutoSum and/or Status Bar Function	How Function Appears in Formula	Description
Sum	SUM	Adds the values in the cells
Average	AVERAGE	Averages the values in the cells
Count Numbers or Numerical Count	COUNT	Counts the number of values in the cells; cells containing text and blank cells are ignored
Count	COUNTA	Counts the number of nonblank cells
Max or Maximum	MAX	Returns the highest value in the cells
Min or Minimum	MIN	Returns the lowest value in the cells

Once you have entered a formula in a cell, you can use AutoFill to copy it to adjacent cells.

Status Bar Functions

The Status Bar, which is displayed at the bottom of the Excel window, can be customized to display a variety of functions including Average, Count, Numerical Count, Minimum, Maximum, and Sum. To customize the Status Bar, right-click anywhere on it and click to add or remove features. You can also customize additional features of the Status Bar, such as Zoom, Signatures, Overtype Mode, and Macro Recording.
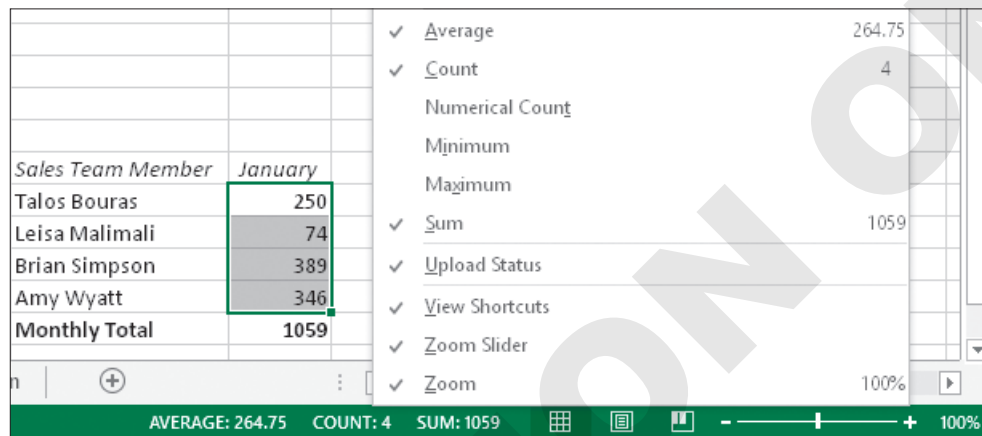
By default, Excel displays in the Status Bar the average, count of values, and sum of the selected range.

QUICK REFERENCE	USING AUTOSUM AND THE STATUS BAR FUNCTIONS
Task	**Procedure**
AutoSum a range of cells	■ Click in the desired cell and choose Home→Editing→AutoSum Σ. ■ Tap [Enter] to confirm the proposed range, or drag to select the correct range and tap [Enter].
AutoSum across columns or down rows	■ Select the cell in the row directly below or column directly to the right of the data where you want the sums to appear and choose Home→Editing→AutoSum Σ.
Use Status Bar functions	■ Right-click the Status Bar and add or remove the desired functions. ■ Select the desired range, and view the results of the desired functions within the Status Bar.

DEVELOP YOUR SKILLS EX04-D01

Use AutoSum and Status Bar Functions

In this exercise, you will use AutoSum to calculate the monthly commission total for the sales team as well as the quarterly total for each sales team member.
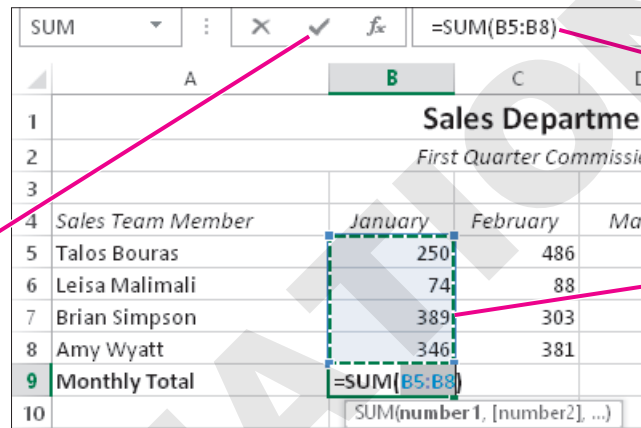
1. Open **EX04-D01-Commissions** from the **Excel 2013 Lesson 04** folder, and save it as **EX04-D01-Commissions-FirstInitialLastName**.

Replace the bracketed text with your first initial and last name. For example, if your name is Bethany Smith, your filename would look like this: EX04-D01-Commissions-BSmith. Notice the two tabs at the bottom of the window: Qtr 1 Commissions and Profit Projection.

2. With the **Qtr 1 Commissions** worksheet displayed, select **cell B9**.

3. Choose **Home→Editing→AutoSum** ∑.

Excel displays a marquee around the part of the spreadsheet where it thinks the formula should be applied. You can change this selection as necessary.

4. Follow these steps to complete the Sum formula:

Ⓐ Note the proposed **formula,** a sum of numbers in the range B5:B8.

Ⓑ Notice that AutoSum adds a **flashing marquee** around the range B5:B8, the most likely range for the formula.

Ⓒ Click Enter to complete the entry. The total should be 1059.

5. Select **cell E7** and choose **Home→Editing→AutoSum** ∑.

Notice that, as there are no values above cell E7, Excel looked to the left to find a range to sum, B7:D7. Now, assume that you wanted only cells B7:C7 to be summed.

6. Follow these steps to override the proposed range:

Ⓐ Select the **range B7:C7**.

Ⓑ Notice that the new range, B7:C7, appears in the formula.

Ⓒ Tap Enter to complete the formula.

7. **Undo** ↶ the formula.

Excel 2013

Use AutoFill to Extend a Formula

8. Follow these steps to AutoFill the formula in cell B9 into the cells to its right:

	A	B	C	D	E
1		**Sales Department**			
2		*First Quarter Commissions*			
3					
4	*Sales Team Member*	*January*	*February*	*March*	**Qtr 1 Total**
5	Talos Bouras	250	486	415	
6	Leisa Malimali	74	88	101	
7	Brian Simpson	389	303	422	
8	Amy Wyatt	346	381	502	
9	Monthly Total	1059			

Ⓒ Release the mouse button to fill the formula into the cells.

Ⓐ Select **cell B9**.

Ⓑ Position the mouse pointer over the **fill handle** at the bottom-right corner of the cell and drag to **cell E9**.

Cell E9 displays 0 because the cells above it are empty. You can create formulas that include empty cells and then enter data later.

9. Select the **range E5:E8**.

10. Choose **Home→Editing→AutoSum** ∑ to calculate the quarterly totals.

Excel created a formula in each cell of the selected range without requiring you to complete the formulas.

Qtr 1 Total
1151
263
1114
1229
3757

11. Delete the formulas in **range B9:E9** and **range E5:E8**.

The data are returned to their original state.

12. Select the **range B5:E9** and click **AutoSum** ∑.

The formula results appear in B9:E9 and E5:E8.

Explore Statistical Functions with AutoSum

13. Select **cell B11**.

14. Choose **Home→Editing→AutoSum ▼ menu button.**

15. Choose **Average** from the drop-down menu.

Excel proposes the range B5:B10, which is incorrect.

16. Select the correct **range B5:B8** and tap ⎡Enter⎤ to complete the entry.

The result should equal 264.75.

17. With **cell B12** selected, choose **Home→Editing→AutoSum ∑ ▾ menu button→Max**.

18. Select the correct **range B5:B8** and tap ⎡Enter⎤ to display the highest value in the range.

The result should equal 389.

19. Select **cell B13** and choose **Home→Editing→AutoSum ▼ menu button→Min**.

Min represents Minimum, *or the lowest value.*

20. Correct the range to **B5:B8** and then click **Enter** ☑ on the Formula Bar to display the lowest value in the range.

The result should equal 74.

21. Select **cell B14** and choose **Home→Editing→AutoSum ▼ menu button**.

22. Choose **Count Numbers**, correct the range to **B5:B8**, and click **Enter** ☑.

23. Select **cell B6** and delete the contents.

The formula recalculates the count as 3, and both the average and minimum formulas recalculate as well.

24. Undo � the deletion.

Use Status Bar Functions

25. Select the **range B5:B8**.

26. Look at the Status Bar in the lower-right corner of the window to see that the sum value displayed equals the result in cell B9. **Save** the workbook and leave it open.

AVERAGE: 264.75   COUNT: 4   SUM: 1059

Creating Formulas

Video Library   http://labyrinthelab.com/videos   Video Number: EX13-V0402

As you saw with AutoSum, functions begin with an equals (=) sign. Formulas begin with an equals sign as well, although Excel will automatically insert the equals sign if you first type a plus (+) or a minus (−) sign.

Cell and Range References

Formulas derive their power from the use of cell and range references. Using references in formulas ensures that formulas can be copied to other cells and that results are automatically recalculated when the data is changed in the referenced cell(s).

⚠ **WARNING**

Do not type the results of calculations directly into cells. Always use formulas.

The Language of Excel Formulas

Formulas can include the standard arithmetic operators shown in the following table. Keep in mind that each formula you create will be entered into the same cell that displays the resulting calculation.

ARITHMETIC OPERATORS IN FORMULAS		
Operator	**Example**	**Comments**
+ (addition)	= B7+B11	Adds the values in B7 and B11
- (subtraction)	= B7–B11	Subtracts the value in B11 from the value in B7
* (multiplication)	= B7*B11	Multiplies the values in B7 and B11
/ (division)	= B7/B11	Divides the value in B7 by the value in B11
^ (exponentiation)	=B7^3	Raises the value in B7 to the third power (B7*B7*B7)
% (percent)	=B7*10%	Multiplies the value in B7 by 10% (0.10)
( ) (grouping)	=B7/(C4-C2)	Subtracts the value in C2 from the value in C4 and then divides B7 by the subtraction result

When typing a cell reference in a formula, you can type the column letter in lowercase and Excel will capitalize it for you.

"Please Excuse My Dear Aunt Sally"

Excel formulas follow the standard algebraic hierarchy. This means that the formula completes operations in the following order: parentheses, exponents, multiplication, division, addition, subtraction. The first letter of each of these is used in the mnemonic "Please Excuse My Dear Aunt Sally," which can be used to memorize this order.

To control the order of operations, you can use parentheses to cause Excel to add or subtract before multiplying or dividing. Review these examples to see how the order of operations works with and without parentheses.

$=53+7*5 = 53+35 = 88$ Multiplication and then addition

$=(53+7)*5 = (60)*5 = 300$ Parentheses and then multiplication

Excel includes two additional items in the order of operations between parentheses and exponents. At the beginning of a formula, a minus (-) sign is interpreted as a negative. A percent sign is also considered as an operator.

DEVELOP YOUR SKILLS EX04-D02
Use the Keyboard to Create Formulas

In this exercise, you will use the keyboard to enter formulas into the spreadsheet.

1. Save your file as **EX04-D02-Commissions-FirstInitialLastName.**

2. Click the **Profit Projection** sheet tab at the bottom of the Excel window.

◄ ►	**Qtr 1 Commissions**	Profit Projection	⊕

3. Select **cell B5** and view its formula in the Formula Bar.

   This formula multiplies the number of contracts (B17) by the average contract revenue (B18).

4. Select **cell B6** and use **AutoSum** to sum the sales in the **range B4:B5**.

5. In **cell B11**, sum the costs in the **range B8:B10**.

   The total costs result is not correct, but you will enter data in cells B9 and B10 in the next exercise.

6. Select **cell B13**, the Gross Profit for the Base column.

7. Type **=B6-B11** in the cell, and then tap Enter to complete the formula.

   In order to calculate the gross profit, you need to subtract the total costs (B11) from total revenue (B6).

8. Select **cell B15**, which is within the Gross Profit vs. Revenue row.

9. Type **=b13/b6** in the cell, tap Enter, and **save** the workbook.

   In this worksheet, the cell has been formatted to display a percentage for you.

Using Cell References in Formulas

A cell reference can be used to represent a cell or range of cells containing the values used in a formula. Cell references are one of three types: relative, absolute, or mixed.

Relative Cell References

A relative cell reference is one where the location is *relative* to the cell that contains the formula. For example, when you enter the formula *=A3-B3* in cell C3, Excel notes that cell A3 is two cells to the left of the formula and that cell B3 is one cell to the left of the formula. When you copy the formula, the cell references update automatically. So, if the

	C
3	=A3-B3
4	=A4-B4
5	

formula were copied to cell C4, the new formula would be *=A4-B4*. Excel updates the cell references so they are the same distance from cell C4 as were the cell references in the original formula in cell C3.

Absolute Cell References

In some situations, you may not want references updated when a formula is moved or copied. You must use either absolute or mixed references in these situations. Absolute references within a formula always refer to the same cell, even when the formula is copied to another location. You create absolute references by placing dollar signs in front of the column and row components of the reference. For example, if the formula = *$A$3-$B$3* were entered in cell C3, and then copied to cell C4, the formula within cell C4 would still read = *$A$3-$B$3*.

Mixed References

You can mix relative and absolute references. For example, the reference $C1 is a combination of an absolute reference to column C and a relative reference to row 1. This can be useful when copying a formula both across a row and down a column.

Using the ⌜F4⌝ Function Key

The ⌜F4⌝ function key can be used to insert the dollar signs within a cell reference. When ⌜F4⌝ is first tapped, dollar signs are placed in front of the column and row components of the cell reference. A second tap of ⌜F4⌝ places a dollar sign in front of only the row component, a third tap places one sign in front of only the column component, and a fourth tap removes all dollar signs.

The following table indicates what happens to different types of cell references when their formulas are copied to other locations.

Cell Reference	Type	Copy and Paste Action	Result When Pasted
B6	Relative	One column to the right	C6
B6	Relative	One row down	B7
$B$6	Absolute	One column to the right	$B$6
$B$6	Absolute	One row down	$B$6
$B6	Mixed	One column to the right	$B6
$B6	Mixed	One row down	$B7
B$6	Mixed	One column to the right	C$6
B$6	Mixed	One row down	B$6

DEVELOP YOUR SKILLS EX04-D03

Create Formulas Using Cell References

In this exercise, you will use absolute cell references to create formulas that can be copied to other cells.

1. Save your file as **EX04-D03-Commissions-FirstInitialLastName.**

2. Select **cell B9** and type **=** to begin a formula.

3. Select **cell D18** and tap F4.

If you have a keyboard that uses function keys for other purposes, you may have to tap F Lock to be able to utilize F4.

Notice $D$18 in the Formula Bar. In this case, you want the marketing expense to always reflect the value in cell D18.

4. Tap Enter to complete the formula.

Calculate the Commissions Using Order of Operations

You will now enter a more complex formula to calculate the total commissions for product sales and contract sales.

5. Select **cell B10** and type **=** to begin a formula.

6. Select **cell B4** and type *****.

   Notice that when you click on cell B4, its cell reference is automatically placed within the formula. This is referred to as Point Mode, and it can help to minimize typing errors.

7. Select **cell B19** and tap F4.

8. Type **+** to continue the formula.

9. Select **cell B5** and type *****.

10. Select **cell B20** and tap F4.

11. Click **Enter** ✓.

    The result should be 27,824.

Calculate the Net Profit Using Parentheses

You will now create the formula =B13 * (1 - $D$20) to calculate the net profit.

12. Select **cell B14** and type **=**.

13. Select **cell B13** and type ***(1-** to continue the formula.

14. Select **cell D20** and tap F4.

15. Type **)** and tap Enter.

    The result should be $138,353.

Project a Sales Increase

*You will now create the formula =$B$4 * (1 + C$3) to project a 2 percent increase over the base product sales.*

16. Select **cell C4** and type an equals sign (=).

17. Select **cell B4** and tap [F4].

18. Type ***(1+** to continue the formula.

19. Select **cell C3** and tap [F4] two times to create the C$3 mixed cell reference.

20. Type **)** and tap [Enter].

The result should equal 54,264.

21. With **cell C5** selected, repeat **steps 16–20** (but using different cell references) to project a **2 percent increase** for base contract sales.

The result should equal 245,820.

22. Save the workbook.

Modifying and Copying Formulas

You can modify and copy formulas just like you edit and copy cells.

Modifying Formulas

You can edit a formula either in the Formula Bar or by double-clicking the formula cell. If you click or select a cell and enter a new formula, it replaces the previous contents.

When you select a formula to edit it, you will see colored lines around all cells referenced by the formula. This feature can help you track the formula elements.

Excel graphically displays the cells referenced by the formula, B13 and D20.

Circular References

A circular reference occurs when the formula refers to its own cell or to another formula that refers to that cell. For example, the formula in cell C6 is =B6*C6. Excel cannot complete the calculation because cell C6 is the formula cell, not a reference to a value. Excel displays an error message if you create a circular reference.
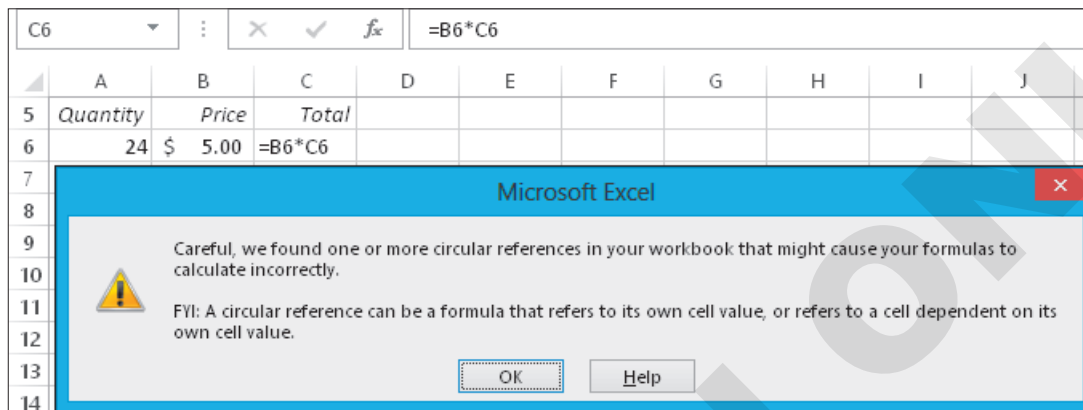
You must correct the formula manually after you close Help or the Circular Reference Warning message.

Copying Formulas

You can use either the Copy and Paste commands or AutoFill with formulas to copy them to new cells. If you use Auto Fill, the Auto Fill Options button will appear after you release the mouse button. Clicking this button allows you to customize your fill. The Fill Series option appears within the resulting list when you AutoFill values, but not when you AutoFill formulas.
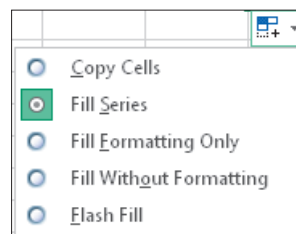
You can change what was copied in the cells through AutoFill with the Auto Fill Options button.

DEVELOP YOUR SKILLS EX04-D04
Modify and Copy Formulas

In this exercise, you will modify and copy formulas to complete your profit projection.

1. Save your file as **EX04-D04-Commissions-FirstInitialLastName.**

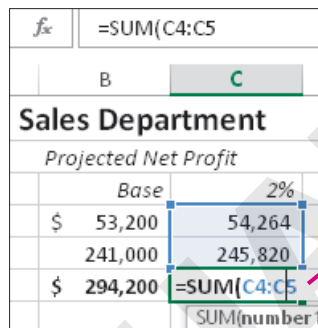2. Select **cell B8**, and then follow these steps to edit the formula in the Formula Bar:
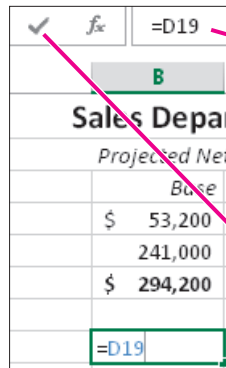
Ⓐ Click the **D19 cell reference** in the Formula Bar.

Ⓑ Tap F4 to change it to an absolute reference.

Ⓒ Click the **Enter** button.

3. Double-click **cell C6** to begin an in-cell edit.

4. Follow these steps to complete an in-cell edit:

Ⓐ Use ← or → to position the insertion point before **5** in the formula.

Ⓑ Tap Delete, type **6**, and tap Enter.

Excel displays a Circular Reference Warning message because you referred to C6, the formula cell itself.

5. Choose **OK** in the Circular Reference Warning message.

6. **Undo** ↶ the change.

Use Copy and Paste Commands to Copy a Formula

7. Select **cell B14** and then use Ctrl+C to **copy** the formula.

8. Select **cell C14** and then use Ctrl+V to **paste** the formula in the new cell.
   This method works great if you need to copy a formula to just one cell. You can use these commands to copy a formula to a range of cells as well.

9. Select the **range D14:E14** and then use Ctrl+V.
   The formula that you copied in step 6 is now pasted to the range of cells selected.

10. Tap Esc to cancel the marquee around cell B14.

11. Select **cell D14** and look at the formula in the Formula Bar.

The relative cell reference now indicates cell D13, whereas the absolute cell reference is still looking to cell D20.

12. Follow these steps to use AutoFill to copy the formula:

	A	B	C	D	E
4	Product Sales	$ 53,200	54,264		+

Ⓐ Select **cell C4**.   Ⓑ **Drag** the fill handle to **cell E4**.   Ⓒ **Release** the mouse button.

13. Use **AutoFill** to copy the formula from **cell C5** to the **range D5:E5**.

14. Select the **range B8:B15**.

15. Place your mouse pointer over the **fill handle** at the bottom right of the selected range.

16. When you see the thin cross **+**, **drag right** until the highlight includes the cells in **column E** and then release the mouse.

	A	B	C	D	E
8	Fixed Operating Cost	101,400	101,400	101,400	101,400
9	Marketing Expense	15,000	15,000	15,000	15,000
10	Commissions	27,824	28,380	29,215	26,433
11	Total Costs	$ 144,224	$ 144,780	$ 145,615	$ 142,833
12					
13	Gross Profit	$ 149,976	$ 155,304	$ 163,295	$ 136,657
14	Net Profit	$ 138,353	$ 143,267	$ 150,639	$ 126,066
15	Gross Profit vs. Revenue	51.0%	51.8%	52.9%	48.9%
16					

17. Deselect the filled range, and **save** the workbook.

Always deselect highlighted cells after performing an action to help avoid unintended changes.

Displaying and Printing Formulas

Video Library   http://labyrinthelab.com/videos   Video Number: EX13-V0405

Excel normally displays the results of formulas in worksheet cells, though you can choose to display the actual formulas. While formulas are displayed, Excel automatically widens columns to show more of the cell contents. Also, you can edit the formulas and print the worksheet with formulas displayed. When printing formulas, you may want to display the worksheet in Landscape orientation, due to the wider columns.
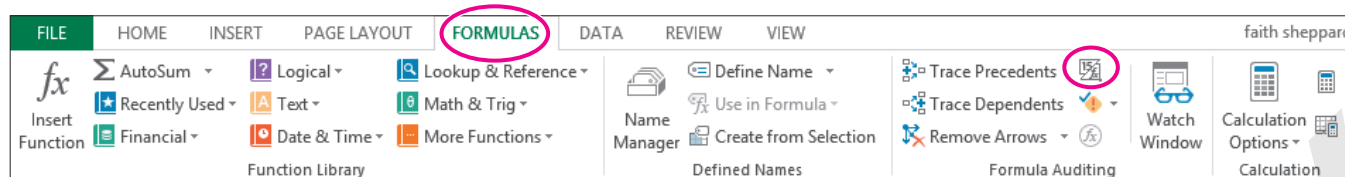
FROM THE RIBBON

Formulas→Formula Auditing→Show Formulas

FROM THE KEYBOARD

Ctrl + `

While formulas are shown, contents will be visible for those cells in which no formulas are used.

QUICK REFERENCE	VIEWING AND PRINTING FORMULAS
Task	**Procedure**
Display or hide formulas in a workbook	■ Choose Formulas→Formula Auditing→Show Formulas 🔢.
Change page orientation	■ Choose Page Layout→Page Setup→Orientation→Landscape.
Print displayed formulas	■ Choose File→Print. ■ Choose any desired options in the Print tab and click Print.

DEVELOP YOUR SKILLS EX04-D05
Display Formulas in a Worksheet

In this exercise, you will display the formulas in the profit projection worksheet to see how it is constructed and to be able to troubleshoot any potentially inaccurate formulas.

1. Save your file as **EX04-D05-Commissions-FirstInitialLastName.**

2. Choose **Formulas→Formula Auditing→Show Formulas** 🔢.

   You can use this feature to examine your formulas more closely.

3. Choose **Formulas→Formula Auditing→Show Formulas** 🔢 again.

   The values are displayed once again.

Using Formula AutoComplete

Formula AutoComplete assists you in creating and editing formulas. Once you type an equals (=) sign and any letter(s), Excel will display a list of functions beginning with the typed letter(s) below the active cell.

Functions Defined

A function is a predefined formula that performs calculations or returns a desired result. Most functions are constructed using similar basic rules, or syntax. This syntax also applies to the Min, Max, Average, Count, and CountA functions.

Begin formulas containing functions with an equals (=) sign.

Here, cells B6 and B8 are added to the range C10:C15.

=SUM(B6:B10)   =SUM(B6,B8,C10:C15)

The function name follows the equals (=) sign.

A set of parentheses surrounds the argument, which is usually a range of cells.

QUICK REFERENCE	USING FORMULA AUTOCOMPLETE TO ENTER A FORMULA INTO A CELL
Task	**Procedure**
Use Formula AutoComplete	■ Type an equals (=) sign and begin typing the formula.
	■ Double-click the formula in the list.
	■ Select the range where you will apply the formula.
	■ Type a closed parenthesis [)] to finish the formula.

DEVELOP YOUR SKILLS EX04-D06
Use Formula AutoComplete

*In this exercise, you will use the Formula AutoComplete feature to create a formula.*

1. Save your file as **EX04-D06-Commissions-FirstInitialLastName.**

2. Click the **Qtr 1 Commissions** worksheet tab.

◄ ►   Qtr 1 Commissions   Profit Projection   ⊕

3. Select **cell C11**.

4. Type **=ave** and observe the list that results.

   If you click on a function in the list, a ScreenTip will describe the function.

5. Double-click **AVERAGE**.

Excel fills in the function name for you, but you must select the range.
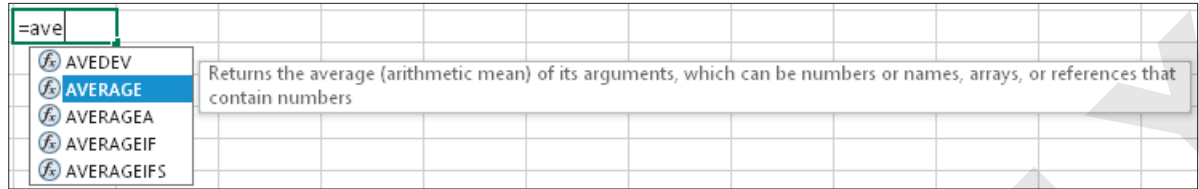
6. Drag to select **cells C5:C8** as the formula range.

> [!NOTE]
> You do not include total rows or columns when completing most functions.

7. Tap [Enter] to complete the function.

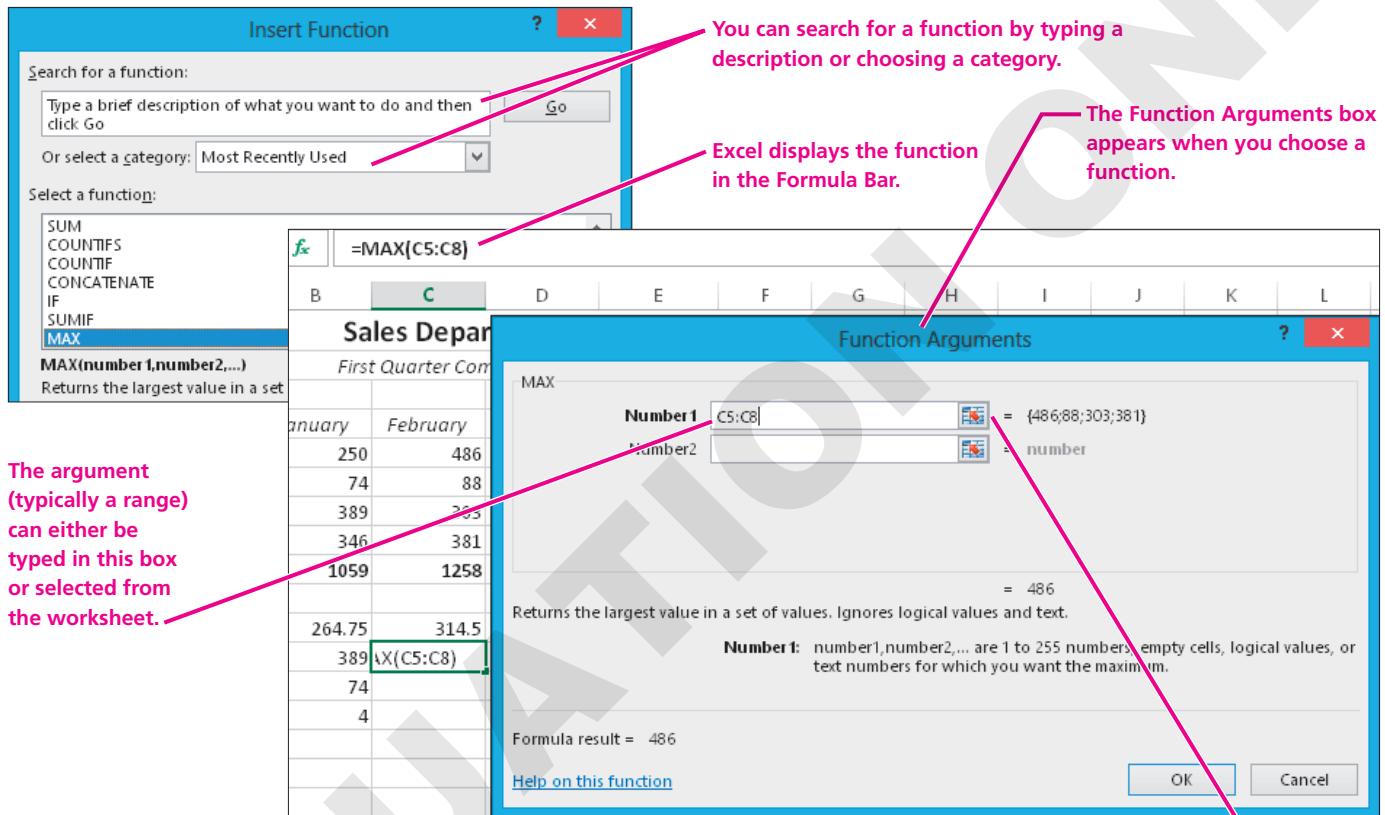*Excel added the parenthesis at the end of the formula for you. The result should be 314.5.*

8. Select **cell C11**, use the fill handle to **copy** the function to the **range D11:E11**, and **save** the workbook.

You now have the average commission for each month and the entire quarter.

Using Insert Function

The Insert Function f_x button displays the Insert Function dialog box. It allows you to locate a function by typing a description or searching by category. When you locate the desired function and click OK, Excel displays the Function Arguments box, which helps you enter function arguments.

Excel 2013

You can search for a function by typing a description or choosing a category.

The Function Arguments box appears when you choose a function.

Excel displays the function in the Formula Bar.

The argument (typically a range) can either be typed in this box or selected from the worksheet.

The Collapse button hides the Function Arguments box while you select the desired range.

! TIP

The Function Arguments dialog box can be moved by dragging its title bar to view the desired range on the worksheet.

QUICK REFERENCE	USING INSERT FUNCTION TO ENTER A FUNCTION IN A CELL
Task	**Procedure**
Create a function using Insert Function	■ Select the cell in which you wish to enter a function.
	■ Click the Insert Function f_x button.
	■ Choose the desired function; click OK.
	■ Select the ranges to include in each function argument; click OK.

Using Insert Function **EX04.19**

DEVELOP YOUR SKILLS EX04-D07

Use Insert Function

In this exercise, you will complete the Commissions worksheet by using the Insert Function command to create maximum and minimum functions.

1. Save your file as **EX04-D07-Commissions-FirstInitialLastName.**

2. Select **cell C12**.

3. Follow these steps to create the Maximum function:

   A Click the **Insert Function** button.

   B Click the **drop-down arrow** and select **Statistical**.
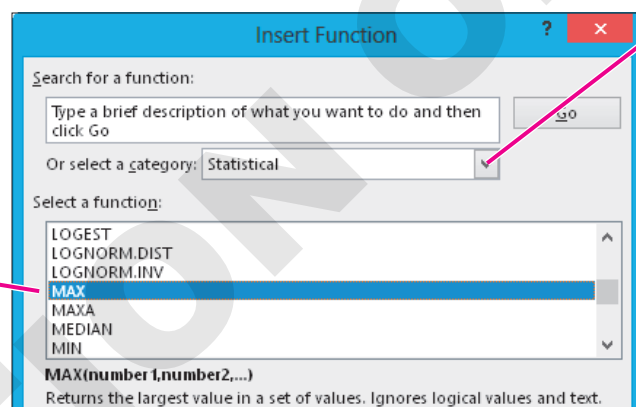
   C Scroll down, click **MAX**, and click **OK**.

   D Click the **Collapse** button.

   E Select the **range C5:C8**.

   F Click the **Expand** button to redisplay the dialog box, and click **OK**.

4. Using the procedure from **step 3**, create the **Minimum** function in **cell C13**.

5. Create the **Count** function in **cell C14**.

6. Select the **range C12:C14**, copy the formulas to the **range D12:E14**, and save the workbook.

	A	B	C	D	E
11	Average	264.75	314.5	360	939.25
12	Maximum	389	486	502	1229
13	Minimum	74	88	101	263
14	Count	4	4	4	4

Creating Formulas with the IF Function

Excel's IF function displays a value or text based on a logical test. It displays one of two results, depending on the outcome of your logical test. For example, if you offer customers a discount for purchases of $200 or more, an IF function could be used to display either the correct discount amount or $0. For purchases greater than $200, the IF function would calculate the discount; for purchases less than $200, the formula would insert $0.

IF Function Syntax

NOTE

If you type the IF formula directly in its cell, you must add quotation (") marks around text arguments. If you use the Insert Function command, Excel adds the quotation marks for you.

The generic parts of the IF function are shown in the following table.

Function	Syntax
IF	IF(logical_test, value_if_true, value_if_false)

The following table outlines the arguments of the IF function.

Argument	Description
logical_test	The condition being checked using a comparison operator, such as =, >, <, >=, <=, or <> (not equal to)
value_if_true	The value, text in quotation (") marks, or calculation returned if the logical test result is found to be true
value_if_false	The value, text in quotation (") marks, or calculation returned if the logical test result is found to be false

How the IF Function Works

The formula =IF(C6>=200,C6*D6,0) is used as an example to explain the function result. Excel performs the logical test to determine whether the value in C6 is greater than or equal to 200. A value of 200 or more would evaluate as true. Any of the following would evaluate as false: a value less than 200, a blank cell, or text entered in cell C6. If the logical test proves true, the calculation C6*D6 is performed and the result displays in the formula cell. If the calculation proves false, the value 0 (zero) displays.

You may also use the IF function to display a text message or leave the cell blank. You may create complex calculations and even use other functions in arguments within an IF function, called nesting. Two examples that display text are shown in the following table.

Formula	Action if True	Action if False
IF(F3>150000, "Over Budget", "Within Budget")	The text *Over Budget* displays	The text *Within Budget* displays
IF(D6<=30, "", "Late")	The cell displays blank	The text *Late* displays

TIP

If you type "" (quotation marks without a space between) as the value_if_true or value_if_false argument, Excel leaves the cell blank.

DEVELOP YOUR SKILLS EX04-D08
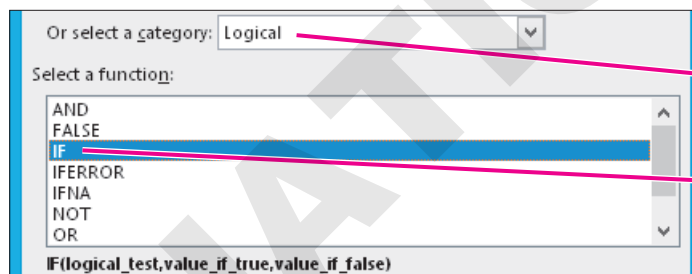
Use the IF Function

In this exercise, you will use the IF function to display a text message when a salesperson achieves at least $30,000 in quarterly sales.

1. Save your file as **EX04-D08-Commissions-FirstInitialLastName.**

2. Type the column heading **Sales** in **cell F4** and **Met Goal?** in **cell G4**.

3. Enter values in the **range F5:F8** as shown.

4. Type **Goal** in **cell A15** and **30000** in **cell F15**.

   You will create a formula that compares the value in the Sales cell with the goal of $30,000. If sales are equal or greater, the message Yes *displays. Otherwise, the cell displays* No.

	F	G
4	Sales	Met Goal?
5	28775	
6	6575	
7	27850	
8	30725	

5. Select **cell G5** and click the **Insert Function** f_x button in the Formula Bar.

6. Follow these steps to find the IF function:

Ⓐ Choose **Logical**.

Ⓑ Double-click **IF**.

The Function Arguments dialog box appears for the IF function.

7. If necessary, move the Function Arguments dialog box out of the way by dragging its title bar until you can see **column G**.

8. Follow these steps to specify the IF function arguments:

Ⓐ Select **cell F5** in the worksheet, tap ⎵Shift⎵+⎵>⎵, and then tap ⎵=⎵ (for greater than or equal to).

Ⓑ Select **cell F15** (the $30,000 goal amount) and tap ⎵F4⎵.
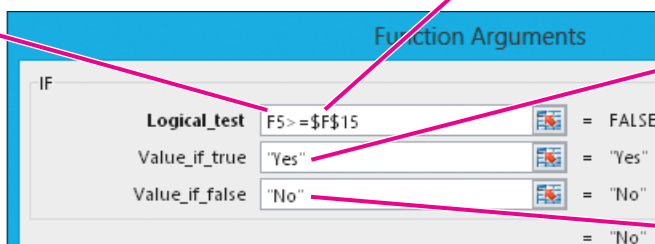
Ⓒ Click in the **Value_If_True box**, type **Yes**, and tap ⎵Tab⎵. (Excel adds the quotation marks.)

Ⓓ Enter **No** in the **Value_If_False** box. Tap ⎵Enter⎵.

9. Review the completed formula in the Formula Bar.

   The formula is =IF(F5>=$F$15,"Yes","No"). The message No *appears in cell G5 because Talos Bouras' sales are not at least $30,000, the value in cell F15. The value_if_false argument applies.*

10. Use **AutoFill** to copy the formula in **cell G5** down to the **range G6:G8**.

    The cell for Amy Wyatt displays Yes *as specified by your value_if_true argument. The cells for all other salespeople display* No.

Edit the IF Function

11. Select **cell G5**.

12. In the Formula Bar, click between the quotation (") mark and the N, and tap ⟨Delete⟩ twice to delete *No*.

    f_x =IF(F5>=$F$15,"Yes","")

13. Click **Enter** ✓ in the Formula Bar.

    Cell G5 does not display a message because the value_if_false argument contains no text.

14. Use **AutoFill** to copy the formula in **cell G5** down to the **range G6:G8**, and **save** the workbook. Exit **Excel**.

    Notice that the cells that previously displayed No *in column G now display no message, as shown in the illustration below. The salespeople who met goal are easier to identify.*

	A	B	C	D	E	F	G
4	Sales Team Member	January	February	March	Qtr 1 Total	Sales	Met Goal?
5	Talos Bouras	250	486	415	1151	28775	
6	Leisa Malimali	74	88	101	263	6575	
7	Brian Simpson	389	303	422	1114	27850	
8	Amy Wyatt	346	381	502	1229	30725	Yes
9	Monthly Total	1059	1258	1440	3757		
10							
11	Average	264.75	314.5	360	939.25		
12	Maximum	389	486	502	1229		
13	Minimum	74	88	101	263		
14	Count	4	4	4	4		
15	Goal					30000	

Concepts Review

To check your knowledge of the key concepts introduced in this lesson, complete the Concepts Review quiz by choosing the appropriate access option below.

If you are…	Then access the quiz by…
Using the Labyrinth Video Library	Going to http://labyrinthelab.com/videos
Using eLab	Logging in, choosing Content, and navigating to the Concepts Review quiz for this lesson
Not using the Labyrinth Video Library or eLab	Going to the student resource center for this book

Excel 2013

Reinforce Your Skills

REINFORCE YOUR SKILLS EX04-R01
Create Simple Formulas

In this exercise, you will create and modify formulas using AutoSum, the keyboard, and Point Mode.

Work with Formulas and Functions

1. Start **Excel**. Open **EX04-R01-OrdersReturns** from the **Excel 2013 Lesson 04** folder and save it as **EX04-R01-OrdersReturns-[FirstInitialLastName]**.

2. Select **cell E4**.

3. Choose **Home→Editing→AutoSum** Σ, and confirm the formula.

4. Use **AutoFill** to copy the formula to **cells E5** and **E6**.
   Note that the Status Bar shows the sum of the range E4:E6.

Create Formulas

5. Select **cell B18**.

6. Type **=B4+B9+B14**, and tap Enter .

7. Use **AutoFill** to copy the formula to **cells C18** and **D18**.

Use Cell References in Formulas

8. Select **cell B19**.

9. Type **=** , select **cell B5**, and type **+**.

10. Select **cell B10** and type **+**.

11. Select **cell B15** and tap Enter .

12. Use **AutoFill** to copy the formula to **cells C19** and **D19**.
    The relative cell references update as you AutoFill the formula.

13. With the range **B19:D19** still highlighted, **AutoFill** to copy the formulas to **B20:D20**.
    Again, relative cell references allow you to AutoFill here and arrive at the correct formulas.

Modify and Copy Formulas

14. Highlight the range **E4:E6**.

15. Click **Copy** 📋.

16. Highlight the range **E9:E11**.

17. Click **Paste** from the Ribbon.

18. Highlight the range **E14:E16**.

19. Click **Paste**.

Note that the marquee continued to surround E4:E6 after you pasted in step 17, so there was no need to click Copy prior to pasting in E14:E16.

20. Examine the formulas in the Formula Bar; then save and close the workbook. Exit **Excel**.

21. Submit your final file based on the guidelines provided by your instructor.

To view examples of how your file or files should look at the end of this exercise, go to the student resource center.


REINFORCE YOUR SKILLS EX04-R02

Display Formulas and Use Functions

In this exercise, you will view formulas, use AutoComplete and Insert Function to create formulas, and use the IF Function.

Display and Print Formulas

1. Start **Excel**. Open **EX04-R02-Contracts** from the **Excel 2013 Lesson 04** folder and save it as **EX04-R02-Contracts-[FirstInitialLastName]**.

2. Tap Ctrl + ` to display the worksheet formulas.

The grave accent key ` is above the Tab key.

3. Choose **View→Workbook Views→Page Layout View** 📄.

4. Take a few minutes to look at how the data and formulas display.

Notice that Excel widened the columns so that most of the cell contents display. In this view, the worksheet fits on two pages.

5. Choose **Page Layout→Page Setup→Change Page Orientation→Landscape**.

Landscape orientation prints across the wide edge of the paper, which can be useful for printing the formula view.

6. Choose **Page Layout→Page Setup→Change Page Orientation→Portrait**.

Portrait orientation prints across the narrow edge of the paper, which is acceptable for printing this worksheet while formulas are hidden.

7. Click the **Normal View** button in the Status Bar at the bottom-right corner of the window.

8. Tap Ctrl + ` to hide the formulas.
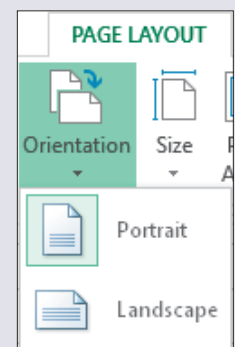
Use Formula AutoComplete

9. Select **cell A10** and edit the label to **Kids for Change Contracts - Prior Year**.

10. Select **cell B2** and use **AutoFill** to copy the series Qtr 2, Qtr 3, and Qtr 4 into the **range C2:E2**.

11. Select **cell B8**.

12. Begin typing the formula **=aver**, and then tap ⎡Tab⎤ to choose **AVERAGE** as the function.

13. Drag to select **B3:B6** and then tap ⎡Enter⎤.
    The result should equal 33.

14. Use the **fill handle** to copy the formula across **row 8**.
    The average for each quarter of the current year is now displayed.

Use Insert Function

15. Select **cell B17**.

16. Click **Insert Function** from the Formula Bar.

17. Click the drop-down arrow and select **Statistical**.

18. Click the **Average** function from the list, and click **OK**.

19. Modify the range to **B12:B15** and confirm the formula.
    The result should equal 23.5.

20. Use the **fill handle** to copy the formula across **row 17**.

21. Select **cell B20**.

22. Use **point mode** to enter the formula =B7-B16, and complete the entry.
    The result should equal 38.

23. Use the **fill handle** to copy the formula across **row 20**.
    The number of contracts decreased for the third quarter from 76 to 72.

Create Formulas with the IF Function

24. Select **cell B21** and click **Insert Function** from the Formula Bar.

25. Select the **IF** function from the Logical category and click **OK**.
    The Function Arguments dialog box displays.

26. For the Logical Test entry, select **cell B20** in the worksheet, tap ⎡Shift⎤+⎡>⎤ for the greater-than symbol, and type **0**.

27. Tap ⎡Tab⎤ to complete the entry.

28. Type **Increase** in the Value If True box and tap ⎡Tab⎤.

29. Type **Decrease** in the Value If False box and tap ⎡Enter⎤.
    The result displays as Increase.

30. Use the **fill handle** to copy the formula across **row 21**; save and close the workbook. Exit **Excel**.

31. Submit your final files based on the guidelines provided by your instructor.
    To view examples of how your file or files should look at the end of this exercise, go to the student resource center.

REINFORCE YOUR SKILLS EX04-R03

Use Formulas to Complete a Worksheet

In this exercise, you will utilize multiple techniques to create appropriate formulas throughout a worksheet.

Work with Formulas and Functions

1. Start **Excel**. Open **EX04-R03-BenefitPlan** from the **Excel 2013 Lesson 04** folder and save it as **EX04-R03-BenefitPlan-[FirstInitialLastName]**.

2. Select **cell C12**, and choose **Home→Editing→AutoSum menu ▼→Min**.

3. Change the range within the formula to **C5:C9**.

4. Use the AutoSum menu to insert the **Maximum** for this range in **cell C13**.

Create Formulas

5. Select **cell J5**.

6. Type **=C5+E5+G5+I5** and tap ⏎Enter.

7. Use **AutoFill** to copy the formula to **J6:J10**.

Use Cell References in Formulas

8. Select **cell C10**.

9. Type **=sum(**, select the **range C5:C9**, and confirm the formula.

10. With **cell C10** selected, choose **Home→Clipboard→Copy**.

11. Select cell **E10**, hold down ⃞Ctrl, and select **cells G10 and I10**.
    You can highlight nonadjacent cells by holding down the ⃞Ctrl *key.*

12. Choose **Home→Clipboard→Paste**.

13. Select **cell C15**.

14. Type **=** and select **cell C10**.

15. Type *****, select **cell J1**, and tap ⃞F4; confirm the formula.
    Absolute formatting is needed for cell J1 so that the Match Percentage cell reference does not change when the formula is copied.

Modify and Copy Formulas

16. Highlight the **range C12:C13**.

17. Click **Copy** 📋.

18. Highlight the **range E12:E13**, hold down ⃞Ctrl, highlight **G12:G13** and **I12:I13**.

19. Click **Paste** .

20. Repeat the prior four steps to replicate the formula in **cell C15** to **cells E15**, **G15**, and **I15**.
    Take a few minutes to examine the formulas in the Formula Bar.

Display and Print Formulas

21. Choose **Formulas→Formula Auditing→Show Formulas** 📊.

22. Choose **View→Workbook Views→Page Layout View** 📄.

*Take a few minutes to look at the way the data and formulas display.*

Notice that Excel widened the columns so that most of the cell contents display.

23. Choose **Page Layout→Page Setup→ Change Page Orientation→Landscape**.

Landscape orientation prints across the wide edge of the paper, which is useful for printing the formula view.

24. Click the **Normal View** button in the Status Bar.

25. Tap Ctrl + ` to hide the formulas.
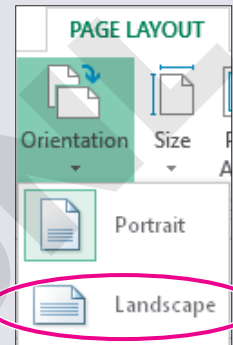
Use Formulas AutoComplete

26. Select **cell C17**.

27. Begin typing the formula **=aver**, and tap Tab to choose **AVERAGE**.

28. Hold Ctrl to select **cells C15**, **E15**, **G15**, and **I15**, and then tap Enter.

Using Insert Function

29. Select **cell C14**.

30. Click **Insert Function** from the Formula Bar.

31. Click the drop-down arrow and select **Statistical**.

32. Click the **Count** function from the list, and click **OK**.

33. Modify the range to **C5:C9** and confirm the formula.

34. Copy the formula to cells **E14**, **G14**, and **I14**.

Note that there were more contributions made in the second quarter than during any other quarter.

Create Formulas with the IF Function

35. Select **cell L5** and click **Insert Function** from the Formula Bar.

36. Select **IF** from the Logical category and click **OK**.

37. For the Logical Test entry, select **cell J5** in the worksheet, tap Shift + >, and select **cell K5**.

38. Tap Tab to complete the entry.

39. Type **Yes** in the Value If True box and tap Tab.

40. Type **No** in the Value If False box and tap Enter.

The result displays as No because cells J5 and K5 contain equal values.

41. Use the **fill handle** to copy the formula down **column L**; save and close the workbook. Exit **Excel**.

42. Submit your final file based on the guidelines provided by your instructor.

Apply Your Skills

Create Formulas, and Use Absolute References

In the exercise, you will create a price sheet with formulas that use absolute references.

Work with Formulas and Functions

1. Start **Excel**. Open **EX04-A01-PriceChange** from the **Excel 2013 Lesson 04** folder and save it as **EX04-A01-PriceChange-[FirstInitialLastName]**.

2. Use **AutoSum** to add the original prices in **cell B13**.

Create Formulas

3. Sum the discounted prices for the **range C6:C11** in **cell C13**.

   This formula will yield results when the discounted prices are entered in the worksheet.

Use Cell References in Formulas

4. Calculate the discounted price in **cell C6** as **Original Price * (1 – Discount Rate)**. Use an **absolute reference** when referring to the discount rate in **cell B3**.

5. Copy the formula in **cell C6** down the column.

   Cell C6 was formatted for you so it displays the price with two decimal places.

6. Change the percentage in **cell B3** to **10%**, and watch the worksheet recalculate.

7. Change the percentage in **cell B3** back to **15%**, and watch the worksheet recalculate.

   You use cell references within formulas so that when changes are made, such as to the discount rate here, the formulas will recalculate properly.

Modify and Copy Formulas

8. Type **Cutlery Upgrade** in **cell A12**, and type **90** in **cell B12**.

   Notice that the discounted price in cell C12 has automatically displayed.

9. Ensure that the discounted price in cell C12 is calculated properly; save and close the workbook. Exit **Excel**.

10. Submit your final file based on the guidelines provided by your instructor.

    To view examples of how your file or files should look at the end of this exercise, go to the student resource center.

APPLY YOUR SKILLS EX04-A02
Use the AVERAGE and IF Functions

In this exercise, you will create an IF function to indicate whether a department met the safety goal each month. You will create formulas to total the safety incidents in a six-month period, and calculate the average number of incidents per month.

Display and Print Formulas

1. Start **Excel**. Open **EX04-A02-SafetyGoal** from the **Excel 2013 Lesson 04** folder and save it as **EX04-A02-SafetyGoal-[FirstInitialLastName]**.

2. Enter **January** in **cell A6**. **AutoFill** down **column A** to display the months January through June.

3. Display the worksheet formulas.

   Because you have not yet entered any formulas, nothing changes.

4. Hide the worksheet formulas.

   This ensures that you will see the results of any formulas entered in upcoming steps.

Use Formula AutoComplete

5. Use **AutoComplete** to enter the sum function in **cell B12**. Add all incidents in column B within this formula.

Use Insert Function

6. Use **Insert Function** to enter the **Average** function in **cell B14** to find the average number of safety incidents per month from January through June.

   Your formula should return an average of one incident per month.

Create Formulas with the IF Function

7. Use the **IF** function to create a formula in **cell C6** that indicates whether the department met its goal of no safety incidents during the month. Excel should display *Met Goal* if the incidents are equal to zero (0) and *Not Met* if the incidents are more than 0.

8. Copy the formula down the column for the months February through June; save and close the workbook. Exit **Excel**.

9. Submit your final file based on the guidelines provided by your instructor.

   To view examples of how your file or files should look at the end of this exercise, go to the student resource center.

APPLY YOUR SKILLS EX04-A03
Create a Financial Report

In this exercise, you will create a worksheet by entering data, creating formulas, and using absolute references. You will also save, print a section of, and close the workbook.

Work with Formulas and Functions

1. Start **Excel**. Open **EX04-A03-NetProfit** from the **Excel 2013 Lesson 04** folder and save it as **EX04-A03-NetProfit-[FirstInitialLastName]**.

2. Use **AutoSum** to add the revenue in **cell F4**.

Create Formulas

3. Type a formula in **cell B10** to sum the costs for Q1 in **column B**.
   Practice typing the cell references here. You will use Point Mode later.

4. **AutoFill** the quarter headings in **row 3** and the Total Costs formula in **row 10**.
   Ensure that you AutoFill the total costs through column F.

Use Cell References in Formulas

5. Use a formula to calculate employee costs in **cell B6**. The formula should multiply the revenue (**cell B4**) by the percentage (**cell B15**). Use a **mixed reference** to refer to the revenue and an **absolute reference** to refer to the cost percentage.

6. Copy the titles in the range **A6:A9** to the range **A15:A18.**

7. Use formulas to calculate the other costs in the range **B7:B9**. Each formula should multiply the revenue in **row 4** by the related cost percentage in **rows 16–18**.

8. Calculate the net profit in **cell B13** as `Gross Profit * (1 – Tax Rate)`. Once again, use an absolute reference when referring to the tax rate in **cell B19**.
   Your Net Profit should equal 169,740.

Modify and Copy Formulas

9. Modify the formula in **cell B12** to calculate Gross Profit as Revenue minus Total Costs.

10. Copy the range **B12:B13** to the range **C12:F13**.

11. Copy the formulas in the range **B6:B9** to the range **C6:E9**.

Display and Print Formulas

12. Display the worksheet formulas.
    Review the formulas to ensure that they have been entered correctly.

13. Hide the worksheet formulas.

Use Formula AutoComplete

14. Use **AutoComplete** to calculate Total Employee Costs in **cell F6**.

15. Copy the formula from **cell F6** to **cell F7**.

The Total Capital Expenditures in cell F7 should equal 377,300.

Use Insert Function

16. Use the **Insert Function Dialog Box** to sum the Total Materials Costs in **cell F8**.

17. Copy the formula from **cell F8** to **cell F9**.

Create Formulas with the IF Function

18. Create an IF Function in **cell H12** to determine if the Annual Gross Profit Goal in cell H4 has been met. Excel should display *Met Goal* if it has been met and *Missed Goal* if it has not been met. Save and close the workbook. Exit **Excel**.

Since the Gross Profit of 463,050 is less than the 500,000 goal in cell H4, Missed Goal *is displayed in cell H12.*

19. Submit your final file based on the guidelines provided by your instructor.

Extend Your Skills

In the course of working through the Extend Your Skills exercises, you will think critically as you use the skills taught in the lesson to complete the assigned projects. To evaluate your mastery and completion of the exercises, your instructor may use a rubric, with which more points are allotted according to performance characteristics. (The more you do, the more you earn!) Ask your instructor how your work will be evaluated.

EX04-E01 That's the Way I See It

You are known as the neighborhood Excel expert for small businesses! The chamber of commerce has asked you to create a worksheet analyzing three different retail businesses in your area so they can determine the profitability of the businesses in order to help develop marketing plans for the individual chamber members as well as the community at large. You will evaluate the local competition for each business, and create a formula that shows how well positioned the three companies are in the marketplace.

Open **EX04-E01-Competition** from the **Excel 2013 Lesson 04** folder and save it as **EX04-E01-Competition-[FirstInitialLastName]**.

Enter three companies and their industries at the top of the worksheet. Be sure to select companies from three different industries (electronics, women's clothing, etc.). Enter the direct competitors for each company within the spreadsheet, and create formulas that will display the number of competitors for each. Lastly, include a formula that designates companies with three or more competitors as having "High" competition, and companies with fewer than three competitors as having "Low" competition.

You will be evaluated based on the inclusion of all elements specified, your ability to follow directions, your ability to apply newly learned skills to a real-world situation, your creativity, and the relevance of your topic and/or data choice(s). Submit your final file based on the guidelines provided by your instructor.

EX04-E02 Be Your Own Boss

In this exercise, you will create a customer listing that shows the number of jobs performed for each customer of Blue Jean Landscaping, and the billings associated with each.

Open **EX04-E02-CustomerBase** from the **Excel 2013 Lesson 04** folder and save it as **EX04-E02-CustomerBase-[FirstInitialLastName]**.

Create formulas in the designated cells within column B to determine the total number of jobs for each company type and to count the number of companies of each type. For the Billings Increase columns, first place the increase percentages in a suitable location within the spreadsheet, and then use absolute formatting to create formulas for each company referencing these percentages. Format the worksheet using your knowledge of Excel, ensuring that all numbers are displayed properly. Since this is your company, write a paragraph with at least five sentences that summarizes the data you have calculated. Type the paragraph below the data. In it, explain what you have learned from the calculations and how you might change how you do business as a result.

You will be evaluated based on the inclusion of all elements specified, your ability to follow directions, your ability to apply newly learned skills to a real-world situation, your creativity, and your demonstration of an entrepreneurial spirit. Submit your final file based on the guidelines provided by your instructor.

Transfer Your Skills

In the course of working through the Transfer Your Skills exercises, you will use critical-thinking and creativity skills to complete the assigned projects using skills taught in the lesson. To evaluate your mastery and completion of the exercises, your instructor may use a rubric, with which more points are allotted according to performance characteristics. (The more you do, the more you earn!) Ask your instructor how your work will be evaluated.

EX04-T01 Use the Web as a Learning Tool

Throughout this book, you will be provided with an opportunity to use the Internet as a learning tool by completing WebQuests. According to the original creators of WebQuests, as described on their website (WebQuest.org), a WebQuest is "an inquiry-oriented activity in which most or all of the information used by learners is drawn from the web." To complete the WebQuest projects in this book, navigate to the student resource center and choose the WebQuest for the lesson on which you are currently working. The subject of each WebQuest will be relevant to the material found in the lesson.

WebQuest Subject: Utilizing the IF function when classifying restaurant chains as successful or unsuccessful

Submit your final file(s) based on the guidelines provided by your instructor.

EX04-T02 Demonstrate Proficiency

You have decided to recreate the Product Markup Worksheet for Stormy BBQ to make it more user-friendly. Specifically, you would like to remove the markup percentages from individual formulas. You want to replace them with a cell reference from the worksheet that contains the markup percentage.

Open **EX04-T02-ProductMarkup** from the **Excel 2013 Lesson 04** folder and save it as **EX04-T02-ProductMarkup-[FirstInitialLastName]**. Use the formula writing and absolute formatting skills that you have learned in this lesson to create the markup formulas described above and produce a more user-friendly worksheet. Format the worksheet as desired, ensuring that all numbers are properly formatted and will appear in a logical manner when printed.

Submit your final file based on the guidelines provided by your instructor.