

UNIT 3—INTRODUCTORY MICROSOFT EXCEL

LESSON 5—FUNCTION FORMULAS

Objectives

- Identify the parts of a function formula.
- Use function formulas to solve mathematical problems.
- Use function formulas to solve statistical problems.
- Use function formulas to solve financial problems.
- Use function formulas to insert times and dates in a worksheet.
- Use logical function formulas to make decisions with worksheet data.

Teaching Materials

- Learner text
- Data files from the **Data Files for Students** drop-down menu on the *Instructor's Resource* CD-ROM
- PowerPoint presentation from the **PowerPoint Presentations** drop-down menu on the *Instructor's Resource* CD-ROM
- Solutions to Step-by-Step exercises, review questions, and projects from the **Solutions to Exercises** drop-down menu on the *Instructor's Resource* CD-ROM
- ExamView® test questions from the **Test Bank & Test Engine** drop-down menu on the *Instructor's Resource* CD-ROM
- Grading rubrics and annotated solutions from the **Additional Faculty Files** drop-down menu on the *Instructor's Resource* CD-ROM

Prepare

- Focus learners' attention on the objectives for the lesson.
- Set up a projection system and show the PowerPoint presentation for the lesson, if desired.
- Make sure learners know how to access the data files for this lesson.
- Prepare questions from ExamView.

Technical Notes

Make sure all computers are connected to a functioning printer.

Lecture Notes and Teaching Tips

Function formulas are one of the most difficult aspects of Excel. Many calculations performed in the worksheets in this lesson would be extremely difficult to perform by hand. This lesson has attempted to minimize the anxieties learners often experience with statistical and financial functions by using simple examples in the Step-by-Steps.

Function Formulas

This section defines function formulas. Functions are a powerful computing tool, and learners should find that the Insert Function and Function Arguments dialog boxes make it easy to use this tool.

Quick Quiz

1. True or False? Function formulas do not use operators to calculate a result.
Answer: True
2. True or False? Excel has function formulas that convert values to dates and times.
Answer: True

Parts of Function Formulas

The structure of a function formula is illustrated in this section. Make sure learners understand what is meant by the “argument.” You might want to open the Insert Function dialog box to demonstrate the various categories of functions and the functions that fall under them. Choose a function as an example and proceed to the Function Arguments dialog box.

Entering a Range in a Formula by Dragging

Learners have used the point-and-click method to select cells referenced in formulas. This section explains how to do basically the same thing to select a range referenced in a formula function. It would be helpful to demonstrate how to use the Collapse Dialog buttons in the Function Arguments dialog box and the Expand Dialog button to restore the dialog box.

Quick Quiz

1. In a function formula, the _____ is a value, cell reference, range, or text that acts as an operand.
Answer: argument
2. True or False? The only way to enter a function formula is through the Insert Function and Function Arguments dialog boxes.
Answer: False

Types of Functions

The rest of the lesson discusses the most commonly used functions within the various categories of functions.

Mathematical and Trigonometric Functions

The SUM function is probably the most commonly used function. Learners will also use the ROUND function.

Statistical Functions

Review the statistical functions presented in Table 5-2. Learners will use these in various end-of-lesson projects.

Financial Functions

These functions will help learners understand the power of function formulas. By plugging in a few numbers, they can almost instantly determine the viability of an investment, the cost of a loan, and so forth.

Date, Time, and Text Functions

Learners use date and time functions to enter the current date and time in a worksheet. This function allows for the date and time to be updated each time the workbook is opened. They use the REPT text function to repeat text in a worksheet.

Logical Functions

A logical function is used to display a value if a certain condition exists. The argument in a logical function is more complex than what learners have entered in previous exercises, so be sure to review the example in the text, IF(C4>60,“PASS”,“Fail”).

Quick Quiz

1. COUNT is an example of a(n) _____ function.

Answer: statistical

2. True or False? You would use a logical function, such as the IF function, to analyze a loan or investment.

Answer: False

Discussion Questions

1. The FV function determines the future value of a series of equal payments. Discuss how you could apply this function to a personal savings plan.
2. The function formula =NOW() displays the current date or time in a worksheet. Why would you want to insert this function in a worksheet?
3. In Question #1 above, you discussed how you could apply the FV function to a personal savings plan. Now, discuss how you could use the IF function to determine whether you have set up an effective personal savings plan.

Key Terms

- **Argument:** Value, cell reference, range, or text that acts as an operand in a function formula.
- **Financial function:** Functions such as future value, present value, and payment are used to analyze loans and investments.
- **Function formula:** Special formulas that do not use operators to calculate a result.
- **Logical function:** Function used to display text or values if certain conditions exist.
- **Mathematical function:** Functions that manipulate quantitative data in the worksheet using operations such as logarithms, factorials, and absolute values.
- **Statistical function:** Functions used to describe large quantities of data such as the average, standard deviation, or variance of a range of data.
- **Trigonometric function:** Functions that manipulate quantitative data in the worksheet using sines, cosines, and tangents.

Projects to Assign

- In Project 5-2, learners will use the COUNT, AVERAGE, MAX, MIN, and STDEV functions and apply the Number format to data. They will then save, print, and close the workbook file.
- In Project 5-3, learners will use the PMT and FV functions. They will print two separate ranges in the worksheet, and then they will save and close the workbook file.
- In Project 5-4, learners will use the SUM, AVERAGE, STDEV, and COUNT functions and copy function formulas. They will save and print the workbook file. They will then answer questions about the player statistics.
- In Project 5-5, learners will use the IF and NOW functions, copy function formulas, and apply a date format. They will then save, print, and close the workbook file.
- In Project 5-6, learners will use the AVERAGE and IF functions. They will then save, print, and close the workbook file.
- In Critical Thinking Activity 5-1, learners will use the SUM, MAX, MIN, and AVERAGE functions. They will then save, print, and close the workbook file.
- In Critical Thinking Activity 5-2, learners will open the Insert Function dialog box and search for a function to count the number of empty cells in a range.
- In Critical Thinking Activity 5-3, learners are asked to determine how an IF function could be used to draw attention to negative numbers that appear in column D. They should suggest, for example, that the function formula =IF(D3<0,"UNFAVORABLE","FAVORABLE") be entered in column E. If the value in D3 is negative, the word UNFAVORABLE would be returned.

Assess

Administer the ExamView for Lesson 5.