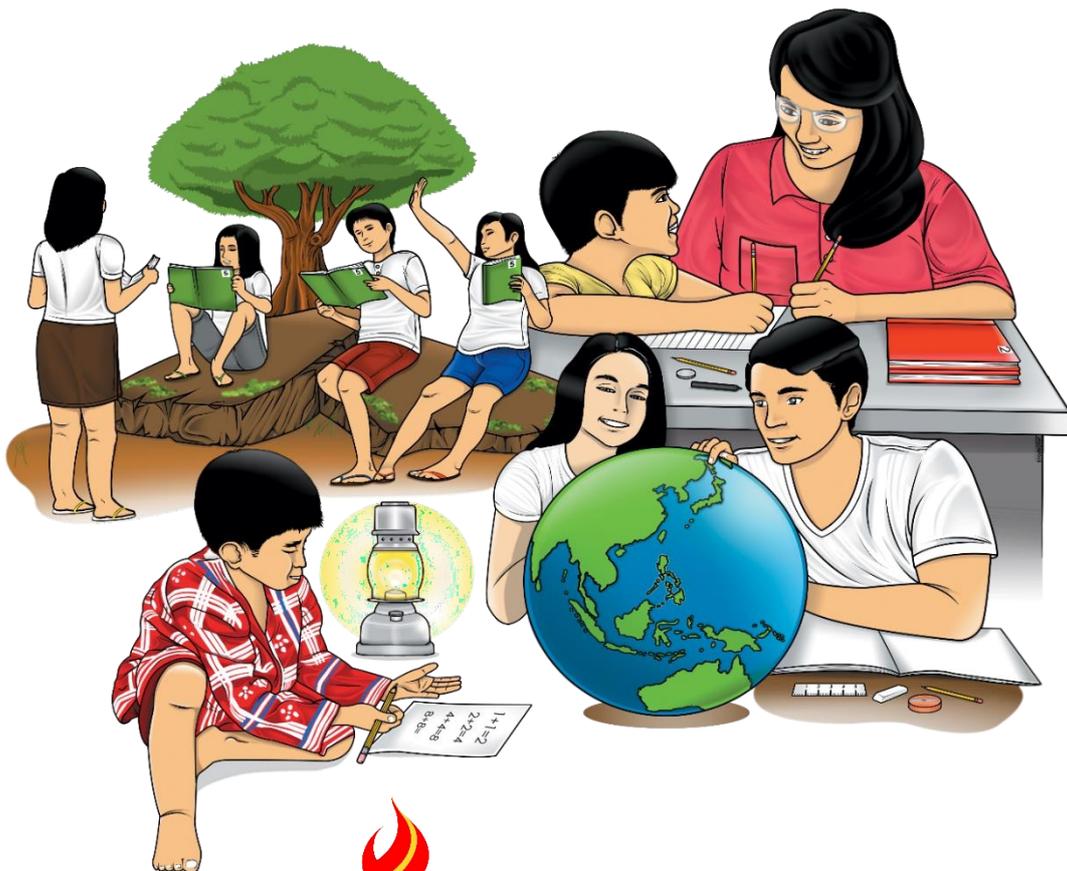


6

# Technology and Livelihood Education

## ICT and Entrepreneurship

### Module 6: Performing Advance Calculations Using Electronic Spreadsheets



**TLE – Grade 6**  
**Alternative Delivery Mode**  
**Module 6: Performing Advance Calculations Using Electronic Spreadsheets**  
**First Edition, 2020**

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# 6

## **Technology and Livelihood Education**

### **ICT and Entrepreneurship**

#### **Module 6: Performing Advance Calculations Using Electronic Spreadsheets**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

## Lesson

# 6

# Performing Advance Calculations Using Electronic Spreadsheets



## *What I Need to Know*

This module was designed and written with you in mind. It is here to help you master the knowledge and skills that will lead you to use functions and formulas in an electronic spreadsheet tool to perform advanced calculations on numerical data. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

This module focuses on analyzing information using ICT. After going through this module, you are expected to:

1. Use functions and formulas in an electronic spreadsheet tool to perform advanced calculations on numerical data.



## *What I Know*

Read and analyze the following statements or questions below. Choose the letter of the correct answer.

1. It multiplies all the numbers given as argument.
  - a. Quotient
  - b. Sum
  - c. Product
  - d. Power
2. What functions should be used when adding all the numbers in a range of cell?
  - a. Sum
  - b. Product
  - c. Quotient
  - d. MOD

3. What function should be used when adding the cells specified by the condition or criteria?
  - a. SUMPRODUCT
  - b. SUMIF
  - c. SUMIFS
  - d. SUMSQ
4. It returns the integer portion of a division.
  - a. Quotient
  - b. Sum
  - c. Product
  - d. Power
5. This function returns the remainder after a number is divided by a divisor.
  - a. SUMPRODUCT
  - b. MOD
  - c. SUMIF
  - d. SUMSQ
6. What is the most popular electronic spreadsheet program that we used today?
  - a. Lotus Symphony
  - b. Google Sheet
  - c. Microsoft Excel
  - d. LibreOffice
7. To begin with an Excel function, what sign should be used when you are manually calculating?
  - a. Plus (+)
  - b. Minus (-)
  - c. equal (=)
  - d. multiply (x)
8. What function that returns the sum of the squares of the arguments?
  - a. SUMIF
  - b. MOD
  - c. SUMPRODUCT
  - d. SUMSQ
9. This function returns the sum of the products of corresponding ranges or arrays.
  - a. SUMIF
  - b. MOD
  - c. SUMPRODUCT
  - d. SUMSQ
10. It is an application program designed to perform basic mathematical and arithmetic operations.
  - a. Electronic spreadsheet
  - b. Slide Presentation
  - c. Word Document
  - d. Publisher



## ***What's In***

An electronic spread sheet application program is designed to perform basic to advanced mathematical and arithmetic operations. Microsoft Excel is one example of the most used electronic spreadsheets. It is widely used in accounting and financial applications, statistics, engineering calculations, as well as in analyzing data.

Another example of spreadsheets that are widely use now a

days are Calc Spreadsheets developed by OpenOffice and LibreOffice. Google Sheets is an online spreadsheet developed by Google.

Spread sheets are designed with functions and formulas that will make calculating numerical data easier and convenient for you. Using formulas and functions will help you increase the accuracy of your calculations while decreasing the amount of time you need to spend in Excel.

**Propriety Software**, also known as non-free software or closed-source software, is computer software for which the software's publisher or another person retains intellectual property rights, usually copyright of the source code, but sometimes patent rights.

On the other hand, **Open Source** is a source code that is made freely available for possible modification and redistribution. Products include permission to use the source code, design documents, or content of the product. It most commonly refers the open-source model, in which open-source software or other products are released under an open-source license as part of the open-source software movement. Use of the term originated with software, but has expanded beyond the software sector to cover the other open content and forms of open collaboration.  
*en.m.wikipedia.org*



## **What's New**

Functions are calculations that return a result. To create and enter functions, always start with an equal sign (=). Without it, Excel will not calculate a result. The inputs in functions are called arguments. Arguments can be in a form of numbers, cell references, or texts.

One of the many built-in functions provided by Excel that is useful for entrepreneurs at your age is the functions under the category of Math. The Math functions in Excel perform many of the common mathematical calculations, including basic arithmetic, conditional sums & products, and the trigonometric ratios. However, only few of them will be tackled here in this

lesson. The selected functions are those that cover basic and advanced mathematical operations, conditional sums and rounding. These functions are presented in the table below.

<b>FUNCTION</b>	<b>DESCRIPTION</b>	<b>SYNTAX</b>
SUM	Adds all the numbers in a range of cell	SUM(number 1, number cx 2,...)
PRODUCT	Multiplies all the numbers given as arguments	PRODUCT(number1, number2,...)
QUOTIENT	Return the integer portion of a division	QUOTIENT(numerator, denominator)
POWER	Returns the result of a number raised to a power	POWER(number, power)
MOD	Returns the remainder after a number is divided by a divisor	MOD(number, divisor)
SUMPRODUCT	Returns the sum of the products of corresponding ranges or arrays	SUMPRODUCT(array 1, array2, ...)
SUMSQ	Returns the sum of the squares of the arguments	SUMSQ(number 1, number2,...)
SUMIF	Adds the cells specified by a given condition or criteria	SUMIFS(range, criteria, sum_range)
SUMIFS	Adds the cells specified by a given set of condition or criteria	SUMIF(sum_range, criteria_range, criteria)
ROUND	Rounds a number to a specified number of digit	ROUND(number, num_digits)



## What is It

Now, let's take a closer look on the following examples. You may copy the sample values in your worksheet for you to try the functions.

Here is the sample data of prices of three sari-sari store and the available products.

	A	B	C	D	E
7		Sari-Sari Stores			
8		X	Y	Z	
9	Available Products	12	10	2	
10		5	6	5	
11		8	9	11	
12		5	4	4	
13		7	8	6	
14					

Go to any vacant cell and do the following:

### SUM Function:

- To get the sum of the values in column X of the table, you type the formula below and you will get 36  
$$=SUM(B9:B13)$$
- To get the sum of the values in column X and column Z, you type the formula below and you will get 65  
$$=SUM(B9:B13,D9:D13)$$
- To get the sum of the values in the table, you type the formula below and you will get 102  
$$=SUM(B9:D13)$$

### **PRODUCT Function**

- To get the product of the values in column X of the table, you type the formula below and you will get 16800

=PRODUCT(B9:B13)

- To get the product of the values in the first row of the table, you type the formula below and you will get 240

=PRODUCT (B9: D9)

- To get the product of the values in the first and third row of the table, you type the formula below and you will get 190080

=SUM(B9:D9,B11:D11)

### **QUOTIENT Function:**

- To get the quotient of the value in the first cell of the table as the numerator and 2 as the denominator, you type the formula below and you will get 6

=QUOTIENT(B9,2)

- To get the quotient of the value in the first cell of the table as the numerator and the second cell to the right as the denominator, you type the formula below and you will get 1

=QUOTIENT(B9,C9)

### **POWER Function:**

- To get the square of the value in the first cell of the table, you type the formula below and you will get 144

=POWER(B9,2)

### **MOD Function:**

- To get the remainder of the value in the first cell of the table and 2 as the divisor, you type the formula below and you will get 0

=MOD(B9,2)

- To get the remainder of the value in the first cell of the table and the second cell to the right as the divisor, you type the formula below and you will get 2

=MOD(B9,C9)

### **SUMPRODUCT Function**

- If you want to multiply the values in column X and column Y of the table and then add the products, you type the formula below and you will get 298

=SUMPRODUCT(B9:B13,C9:C13)

### **SUMSQ Function**

- If you want to get the sum of the squares of the values in column X, you type the formula below and you will get 307

=SUMSQ(B9:B13)

### **SUMIF Function**

- If you want to add only the values in column X that are larger than 5, you type the formula below and you will get 27

=SUMIF(B9:B13, ">5")

- If you want to add only the values in column Z, where the corresponding cells in column X is larger than 5, you type the formula below and you will get 19

=SUMIF(B9:B13, ">5", D9:D13)

### **SUMIFS Function**

- If you want to add the values in column Z only if two conditions are met:
  - o The corresponding cells in column X is larger than 5,
  - o The corresponding cells in column Y is smaller than 5.then you type the formula below and you will get 0

=SUMIFS(D9:D13, B9:B13, ">5", C9:C13, "<5")

- If you want to add the values in column Z only if two conditions are met:
  - o The corresponding cells in column X is smaller than 10,
  - o The corresponding cells in column Y is larger than 5.then you type the formula below and you will get 22

=SUMIFS(D9:D13, B9:B13, "<10", C9:C13, ">5")

### **ROUND Function**

- After dividing the value in the first cell of the table by the value in the second cell to the right of the table, you want to round the result to two decimal places, you type the formula below and you will get 1.2

=ROUND(B9/C9, 2)

- After dividing 5 by 6 and you want to round the result to two decimal places, you type the formula below and you will get 0.83

=ROUND(5/6, 2)

- To round 0.6489 to two decimal places, you type the formula below and you will get 0.65

=ROUND(0.6489, 2)

*Note: If you cannot remember the description and syntax of the functions, just use the **Insert function** button to look for the function. The corresponding description and syntax will be displayed.*



## **What's More**

To ensure the success of your business, it is important to keep track of your customers' order so you will not miss an opportunity to earn. Create a Purchase Order Inventory using an electronic spreadsheet that contains the data below. Make sure to use Function Arguments to help you generate information.

Table 1: Purchase Order Inventory

1. A column for Customers' Names (at least 5 names)
2. A column for products they ordered (3 products)
3. A column for prices (to save you time for encoding, a VLOOKUP Function)
4. A column for order quantity
5. A column for total amount per order
6. A column for [remarks] which will indicate if the order is [Retail] or [Bulk] use IF Function for this. Set the number of order for Retail or Bulk)

Table 2: Summary of Order

1. A column for products
2. A column for total number of order per product
3. Two columns that will generate the count [Bulk] and [Retail] orders.



## ***What I Have Learned***

- The electronic spread sheet software is used to create and produce calculated data needed by individuals and businesses.
- The spread sheet is designed with functions and formulas that will make calculating numerical data easier and convenient for you.
- An Excel functions always begins with an equal (=) sign. Formulas on the other hand, are used like when you are manually calculating



## ***What I Can Do***

Imagine that you are managing a simple sari-sari store. Design an inventory worksheet in Excel identifying sample items that you sell. Follow the instructions below:

1. Type the name of your sari-sari store on the first row of the worksheet.
2. Type "ITEM" on the first column of row 3.
3. Type "QUANTITY" on the second column of row 3.
4. Type "UNIT PRICE" on the third column of row 3.
5. Type 15 items that you sell in the first column starting on the 4th row.
6. Type the corresponding quantity (between 25 - 100) and realistic unitprice of each of the items.
7. Type "NO. OF ITEMS SOLD" on the fourth column of row 3.
8. Type "NO. OF ITEMS LEFT" on the fifth column of row 3.
9. Type "SALES" on the sixth column of row 3.
10. Type any number under NO. OF ITEMS SOLD for each of the items. Be sure to enter a number that is less than the given number under QUANTITY.
11. Format your inventory worksheet according to your own style.
12. Save your inventory worksheet.



## **Assessment**

Answer the following in your notebook.

1. How can an electronic spreadsheet help an entrepreneur run a business?

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2. Can we rely on an electronic spreadsheet to deliver an accurate output?

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3. How would you compare and differentiate the features of proprietary software and those of open source software?

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## **Additional Activities**

True or False. Write your answers in your notebook.

- \_\_\_\_\_ 1. MS Excel is one of the most commonly used computerized worksheet.
- \_\_\_\_\_ 2. SUMPRODUCT is a function that returns the remainder after a number is divided by a divisor.
- \_\_\_\_\_ 3. Using the formulas and functions will help you increase the accuracy of your calculations while decreasing the amount of time you need to spend.
- \_\_\_\_\_ 4. MS Excel is widely used in accounting and financial applications, statistics, engineering calculations, as well as in analyzing data.
- \_\_\_\_\_ 5. To create and enter functions without the equal (=) sign, excel will still calculate a result.



## ***Answer Key***

<p data-bbox="478 1041 742 1086"><b>Additional Activities</b></p> <ol data-bbox="590 884 702 1030" style="list-style-type: none"><li>1. True</li><li>2. False</li><li>3. True</li><li>4. True</li><li>5. False</li></ol>	<p data-bbox="989 1041 1157 1086"><b>What I Know</b></p> <ol data-bbox="965 739 1069 1030" style="list-style-type: none"><li>1. c</li><li>2. a</li><li>3. b</li><li>4. a</li><li>5. b</li><li>6. c</li><li>7. a/c</li><li>8. d</li><li>9. c</li><li>10. a</li></ol>
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