University Information
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Microsoft Office
Excel 2016 for Windows

Intro to Formulas & Basic Functions

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Intro to Formulas and Basic Functions

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Introduction

This booklet is the companion document to the Excel 2016: Intro to Formulas and Basic Functions workshop. It includes and definitions for formulas and functions, and covers the various aspects of creating formulas and the basic functions used in Excel.

Learning Objectives

After completing the instructions in this booklet, you will be able to:

- Understand formulas
- Create formulas
- Understand functions
- Use basic functions
- Know the difference between formulas and functions

Functions and Formulas

A formula performs calculations or other actions on the data in your worksheet. A function is a preset formula in Excel. It is important to understand the following information about functions and formulas.

Basic Information

A formula and a function always begins with an equal sign (=). The data Excel will use to calculate a function is enclosed in parentheses (). Formulas do not include parentheses.

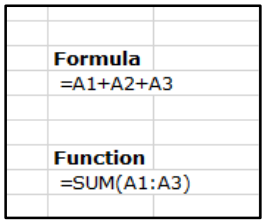

Figure 1 - Formulas & Functions

How to Specify Individual Cells

When there is a comma (,) between cell references in a function, Excel uses each cell to perform the calculation. For example, the function =SUM (A1, A2, A3) is the same as the formula =A1+A2+A3.

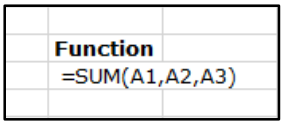

Figure 2 - Using Commas to Separate Cell References

How to Specify a Group of Cells

When there is a colon (:) between cell references in a function, Excel uses the specified cells and all cells between them to perform the calculation. For example, the function =SUM (A1:A3) is the same as the formula =A1+A2+A3 (See Figure 1).

Entering a Formula

The following instructions explain how to enter a formula:

1. Click on the **cell** where you want to enter a formula. This is where the answer will appear. In Figure 3, cell G5 has been selected.

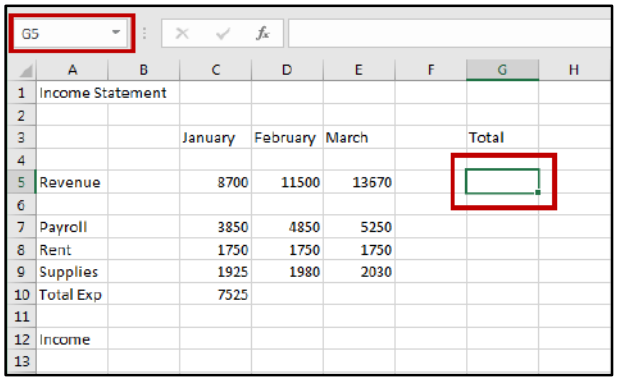

Figure 3 - Select Cell for Formula

2. Type an **equal** sign (=) to begin the formula (See Figure 4).
3. Then type the **formula** (=C5+D5), (See Figure 4).

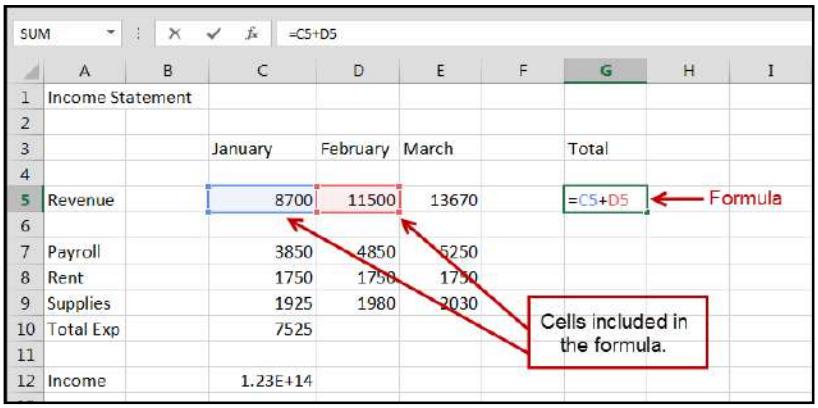

Figure 4 - Entering Formulas

4. Press **Enter**. The results of the calculation will appear in the selected cell (See Figure 5).
5. To view the formula, click the cell containing the formula and it will appear in the formula bar (See Figure 5).

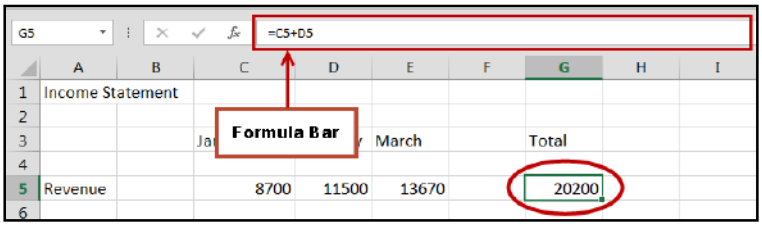

Figure 5 - Formula Bar

Editing a Formula

Sometimes you may need to change a formula to include additional cells, remove cells, etc. The following instructions explain how to edit a formula.

1. Click the **cell** containing the formula you want to edit. The formula will be shown inside the *formula bar* (See Figure 5).

2. Click inside the **formula bar** and make the necessary changes (in Figure 6, E5 was added to the formula).

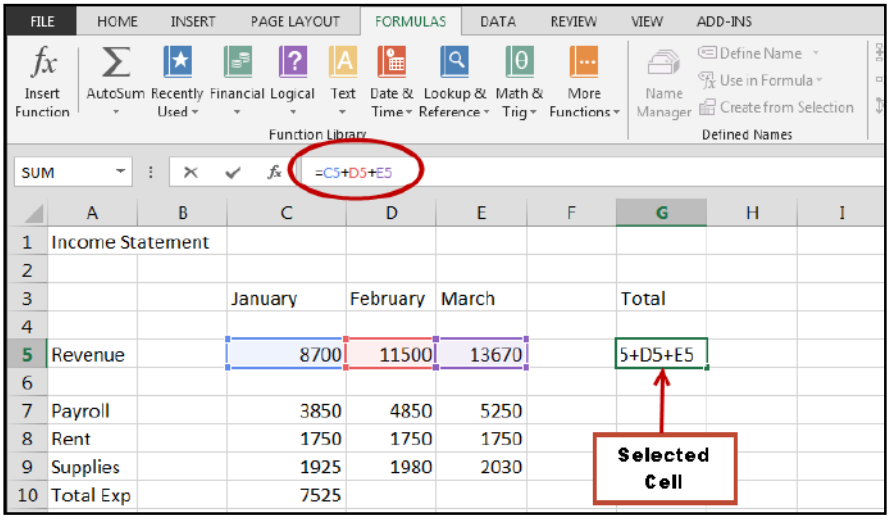

Figure 6 - Editing a Formula

3. When finished, press **Enter** on your keyboard. The answer will appear in the selected cell (See Figure 7).

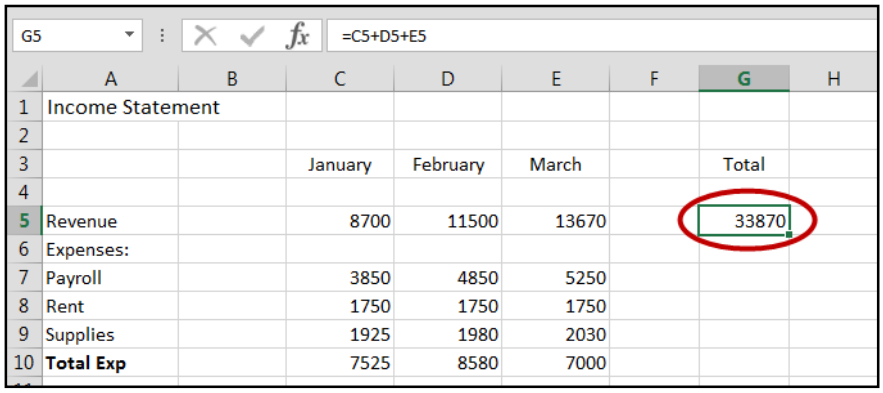

Figure 7 - Edited Formula

Basic Functions

Functions let you perform calculations without typing long, complex formulas. The following instructions explain how to use some basic functions in Excel.

- **SUM** - Adds a list of numbers (See Figure 8).
  Function - =SUM(B3:B7) (See Figure 8).
  Result - 441.6 (See Figure 8).

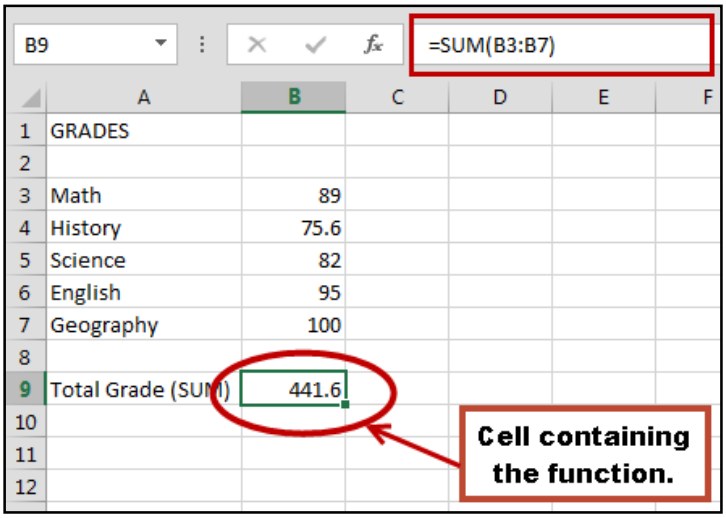

Figure 8 - Entering the SUM Function

- **AVERAGE** - Calculates the average value of a list of numbers (See Figure 9).
  Function - =AVERAGE(B3:B7) (See Figure 9).
  Result - 88.32 (See Figure 9).

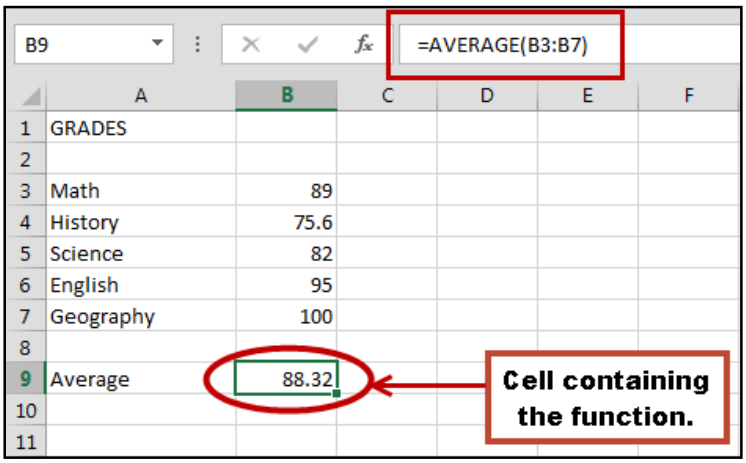

Figure 9 - Entering the AVERAGE Function

- **MAX** - Finds the largest value in a list of numbers (See Figure 10).
  Function - =MAX(B3:B7) (See Figure 10)
  Result - 100 (See Figure 10)

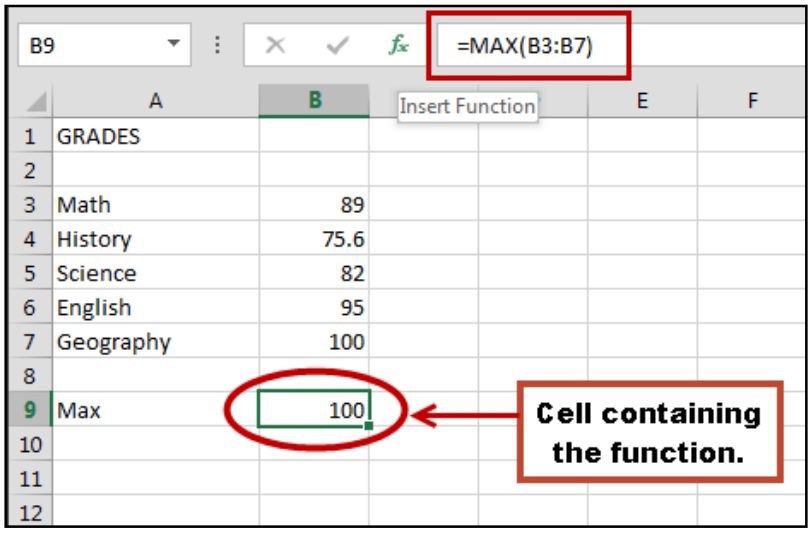

Figure 10 - Entering the MAX Function

- **MIN** - Finds the smallest value in a list of numbers (See Figure 11).
  Function - =MIN(B3:B7) (See Figure 11)
  Result - 75.6 (See Figure 11)

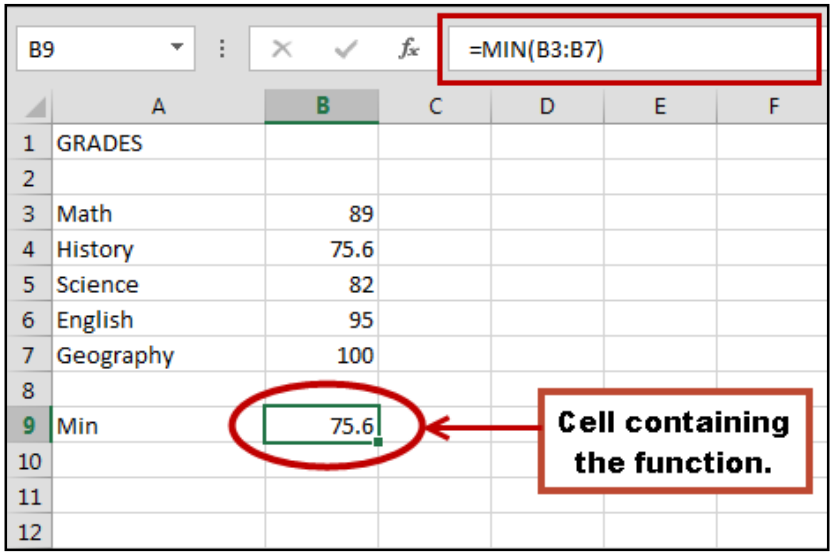

Figure 11 - Entering the MIN Function

- **COUNT** - Calculates the number of values in a list (See Figure 12).
  Function - =COUNT(B3:B7) (See Figure 12)
  Result - 5 (See Figure 12)

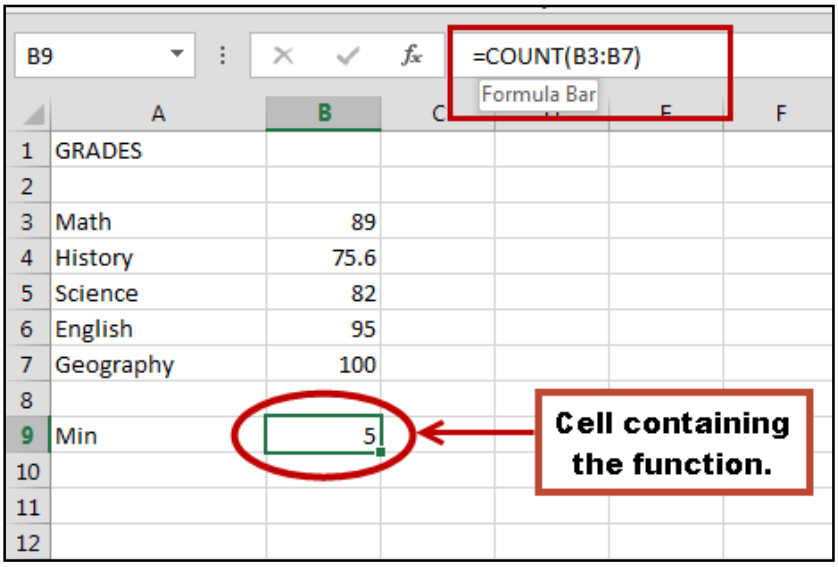

Figure 12 - Entering the COUNT Function

Note: COUNT will only count a cell if it contains numbers only. If used on cells with characters/letters, it will count that cell as empty.

- **ROUND** - Rounds a value to a specific number of digits (See Figure 13).
  Function - =ROUND(B9, 2) (See Figure 13)
  Result - 3.4 (See Figure 13)

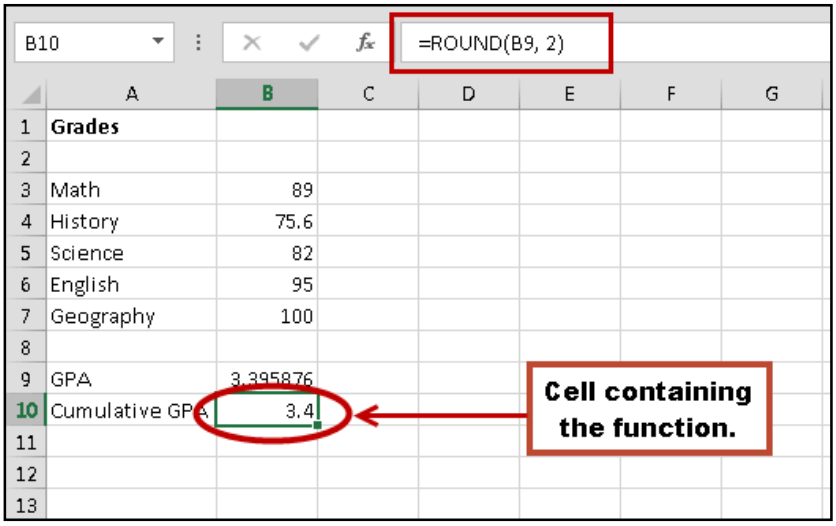

Figure 13 - Entering the ROUND Function

Insert Function Button

The following explains how to use functions.

1. Click to select the **cell** where you want to enter the function on the worksheet.
2. Click the **Insert Function** button on the *Formula Bar*.

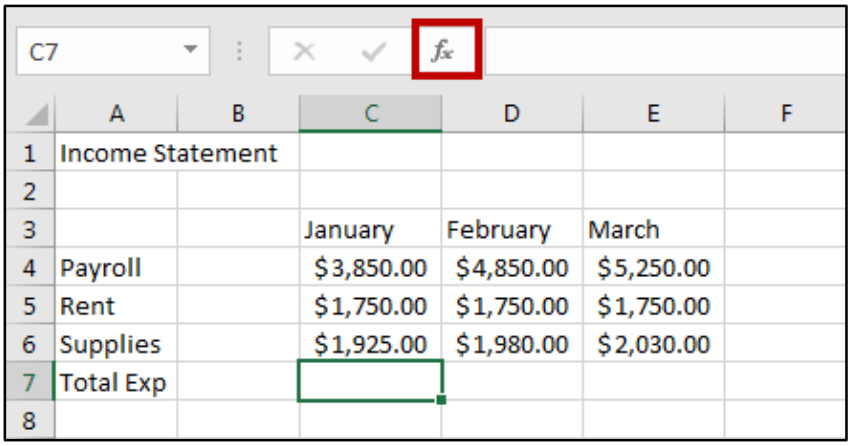

Figure 14 – Insert Function Button

3. The *Insert Function* window will appear. In the *Select a Function* field, select a **Function** that you want to use (e.g. SUM) (See Figure 15).
4. A description, and example on how to use the function will be displayed (See Figure 15).
5. Click **OK** (See Figure 15).

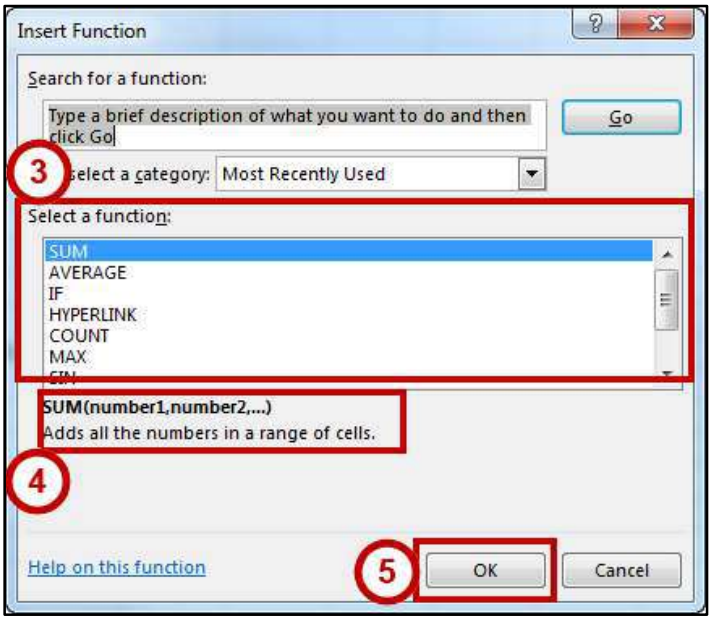

Figure 15 - Insert Function Window

Note: If needed, use the *Function Search* field to search for a function by typing in a description and clicking **Go**.

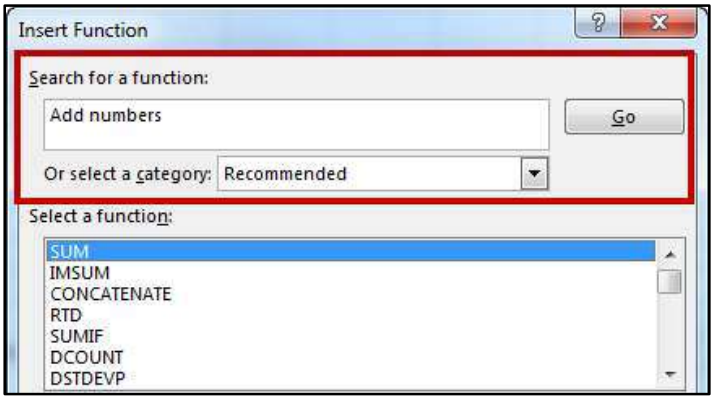

Figure 16 - Search for a Function

6. The *Function Arguments* window appears (See Figure 17).
7. In the *Number 1* field, enter the **cell(s)** that contain the data to be used in the formula (See Figure 17).

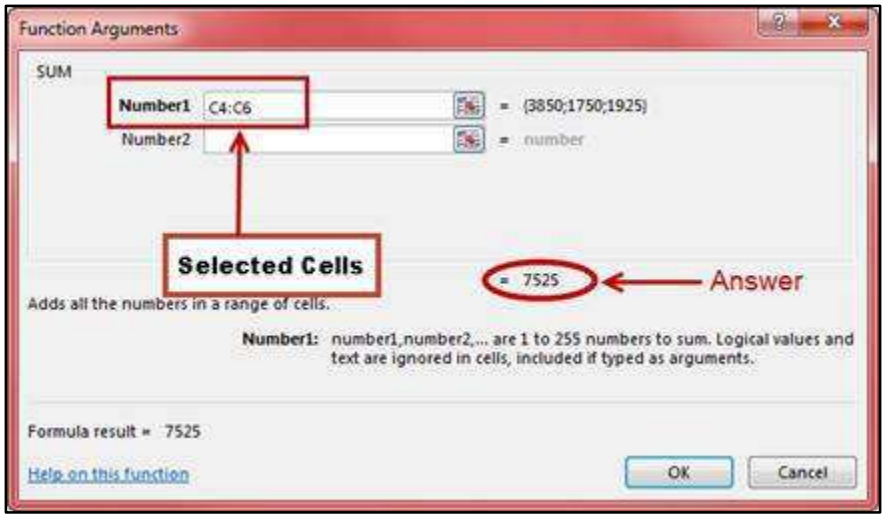

Figure 17 - Function Arguments Window

8. Click **OK**. The results of the formula will appear in the selected cell.

Auto Calculate

The *auto-calculate* feature can be used to do quick calculations on data. The following explains how to use *auto calculate*.

1. Select the **cells** that you want to include in the calculation (See Figure 18).
2. The status bar will display the results of the cells that you selected (See Figure 18).

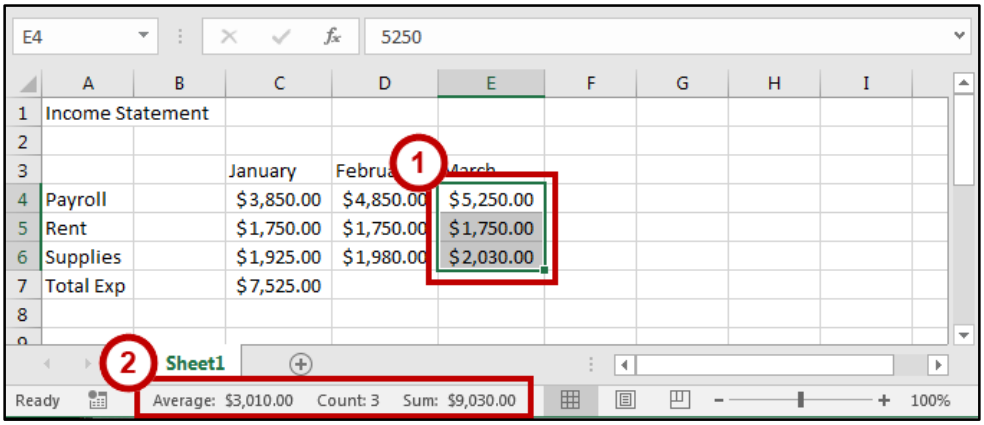

Figure 18 - Auto-Calculate

3. Other calculations can also appear on the status bar. To see the other calculations available, right-click on the **status bar**.
4. A list will appear displaying the calculations you can perform.
5. Select any **calculations** you wish to display on the *Status Bar*.

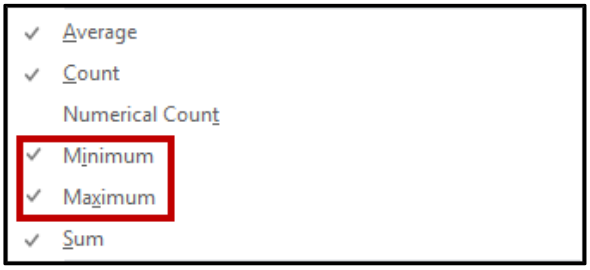

Figure 19 - Status bar calculations

6. The new calculations will appear in the *auto calculate* area of the status bar.

Figure 20 - Added Auto-Calculate Functions

AutoSum

The *AutoSum* tool can quickly enter a basic formula for you in a selected cell. The following example will use the *AutoSum* tool to calculate the *Sum*.

1. Select the **cell** where you want the answer to appear.
2. Under the *Home tab,* in the *Editing* grouping, click **AutoSum.**

Figure 21 - AutoSum

3. A *selection* box will appear around any numbers directly above your selected cell. Adjust the selection box by dragging the sizing handles to include any additional cells.

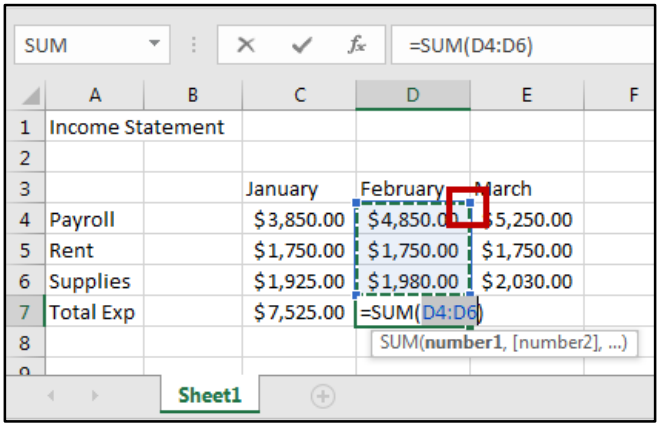

Figure 22 – Selection Box

4. Press the **Enter** key to insert the answer.

Note: The *AutoSum* tool can also be used to run basic functions like AVERAGE, COUNT, MIN, and MAX. Click the **drop-down** arrow next to *AutoSum* to make a selection.

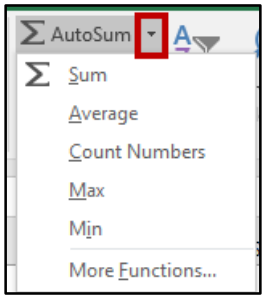

Figure 23 - AutoSum Additional Calculations

Additional Help

For additional support, please contact the KSU Service Desk:

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