Day 4

Lesson 1 - Calculations with Formulas and Functions Part I

A. The most basic of calculations involves adding two cells to get a total. Whereas in using a calculator you key in the numbers, the plus sign (or whatever operator you are using), and then press the equals key, the process for creating an Excel formula is slightly different. First, every formula begins with an equals sign. Secondly, you will want to use cell addresses, not raw numbers when choosing which cells to add. Finally, you can use AutoFill on a formula to fill it across columns or down rows. Formulas will fill relative to where they started. If you need to make part of a formula absolute, that is, to not move when AutoFill is being used, add dollar signs to the row and/or column reference. This creates an absolute reference. Use file: 411-SoCal Sales_ER_422118

1. If necessary, click the OC Sales worksheet tab.
2. To get a total for the January sales, click in cell B7.
3. Type: =B4+B5
4. Press the Enter key.
5. Use the AutoFill feature to fill the totals across all 12 months.
6. Click in cell B8.
7. To multiply the total by the sales tax rate in cell K1, type: =B7*K1
8. To create an absolute reference to K1, type a $ in front of the K and another $ in front of the 1.
9. The formula should look like this: =B7*K1.
10. Press the Enter key.
11. Use the AutoFill feature to fill the sales tax totals across all 12 months.

B. Adding cells across worksheets uses the same basic concepts as for adding cells in the same worksheet. The easiest way to accomplish this task is to type an equals sign, click on one of the cells to add, type the plus sign, click on the worksheet containing the other cell, click on the cell to add, and press the Enter key. This will minimize typing on the formula. Use file: 411a-SoCal Sales_512133

1. If necessary, click the LA Sales tab.
2. Click cell O9.
3. Type: =
4. Click cell B9 (the January total for LA).
5. Type: +
6. Click the OC Sales tab.
7. Click cell B9 (the January total for OC).
8. Press the Enter key.

Lesson 2 - Calculations with Formulas and Functions Part II

A. Use the ribbon to apply the **Sum** function from the **Formulas** tab to cell **O4**. Use file: 411-SoCal Sales_542200

Step 1: Select cell O4.
Step 2: On the **Formulas** tab, in the **Function Library** group, click the **AutoSum** button to bring up the drop-down menu
Step 3: Click **Sum**
Step 4: Press the Enter key

B. Enter the **MIN** function by typing in cell **R4** and using the mouse to select the cell range between **B4** and **M4**. Remember to close the parentheses before pressing Enter to complete the function. Use file: 411-SoCal Sales_342202

Step 1: Select cell **R4**
Step 2: Type: =min(
Step 3: Click and drag from cell B4 to **M4**
Step 4: Type:)
Step 5: Press the Enter key

C. The most common function used in Excel is a SUM function. A SUM function generates a total for a range of cells. The anatomy of a SUM function looks like this: =SUM(B4:E4) to where the =SUM part starts the function, and the (B4:E4) part indicates the cells being totaled through the SUM function. Use file: 412-Grilled Cheese Sales_162204

1. Click cell B7.
2. On the Home tab, click the AutoSum button. Notice that the range B4 through B6 is the selected range to sum.
3. Press the Enter key.
4. Click cell B7.
5. Use the AutoFill feature to fill the totals across the twelve months of data (through column M).

D. Two commonly used functions in Excel are the MIN and MAX functions. The MIN function returns the lowest value in a range of cells. The MAX function returns the highest value in a range of cells. Use file: 413-Grilled Cheese Sales_232209

1. Click cell P4.
2. Click the drop-down arrow on the AutoSum button and click Max.
3. Adjust the range of cells being analyzed from B4 through O4 to B4 through M

4. The function should look like this: =MAX(B4:M4)
5. Press the Enter key.
6. Click cell Q4.
7. To manually enter the MIN function, type =MIN(B4:M4) and press the Enter key. Your worksheet should look like this:

Orange County Sales									Tax	8%					
Item	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	Max	Min
Reg Grilled Cheese	570	840	390	840	630	870	570	630	810	750	600	360		870	360
Gynormous Grilled Cheese	480	690	360	780	420	360	540	570	720	450	330				
Totals	1050	1530	750	1620	1050	1230	1110	1200	1530	1200	930	360			

Lesson 3 - Calculations with Formulas and Functions Part III

A. In cell **B8**, multiply cell **B7** with cell **K1**. Use file: 411-SoCal Sales_442216

Step 1: Select cell **B8**
Step 2: Type: =
Step 3: Click the B7 cell
Step 4: Type: ***
Step 5: Click the K1 cell
Step 6: Press the Enter key

B. In cell **B15** create a formula that applies the **COUNTA** function to cells **B4:M5**. Use file: 411-SoCal Sales_152218

Step 1: Select cell **B15** on the **OC Sales** worksheet
Step 2: Click the **AutoSum** drop-down menu
Step 3: Click **More Functions**
Step 4: Type COUNTA in the search box and click the **Go** button
Step 5: Select **COUNTA** from the Select a function list, then click the **OK** button
Step 6: Click and drag to select the range between **B4** and **M5**
Step 7: Click the OK button

C. The AVERAGE function is used to get an average among numbers. The important part to know about the AVERAGE function is that it does not count empty cells toward an average, but it will count cells containing the number 0 toward an average. Use file: 414-Grilled Cheese Sales_242222

1. Click cell O4.
2. On the Home tab of the ribbon, click the drop-down arrow on the AutoSum button and click Average.
3. Make sure the AVERAGE function is getting the average for the 12 months (cells B4 through M4) and then press the Enter key.
4. In cell O5, enter the AVERAGE function to average cells B5 through M5.

D. The COUNT function is used to count the number of cells containing numbers. The COUNTA function is used to count the number of cells containing any type of data. The

COUNTBLANK function is used to count the number of blank cells in a range. The key to success with any count function is to use the correct count function given a situation.'

1. Click in cell B13.
2. To get a count of cells containing numbers in the range of cells containing sales amounts, type: =COUNT(B4:M5) and press the Enter key. Your worksheet should look like this:

Orange County Sales									Tax	8%						
Item	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Avg	Max	Min
Reg Grilled Cheese	570	840	390	840	630	870	570	630	810	750	600	360		655	870	360
Gynormous Grilled Cheese	480	690	360	780	420	360	540	570	720	450	330			518.1818		
Totals	1050	1530	750	1620	1050	1230	1110	1200	1530	1200	930	360				
Sales Tax																
Grand Totals																
Counts																
Months with Sales	23															
Months with no sales																
Cells with Data																

3. Click in cell B14.
4. To get a count of blank cells in the range of cells containing sales amounts, type: =COUNTBLANK(B4:M5) and press the Enter key.
5. Click in cell B15.
6. To get a count of cells containing labels and numbers from the range of sales data, type: =COUNTA(B3:M5) and press the Enter key.

Lesson 4 - Use Conditional Functions

A. In cell **D4**, create an **IF** formula that checks to see if the value of cell **C4** is greater than **30**. Return the phrase "**Too High**" if the statement is true. Use file: 421-Fuel Expenses_062234

Step 1: Select cell **D4**
Step 2: Type: =IF(
Step 3: Click the Insert Function button (the fx button next to the Formula Bar)
Step 4: In the Logical_test field type: **C4>30**
Step 5: In the Value_if_true field type: Too High
Step 6: Click the OK button

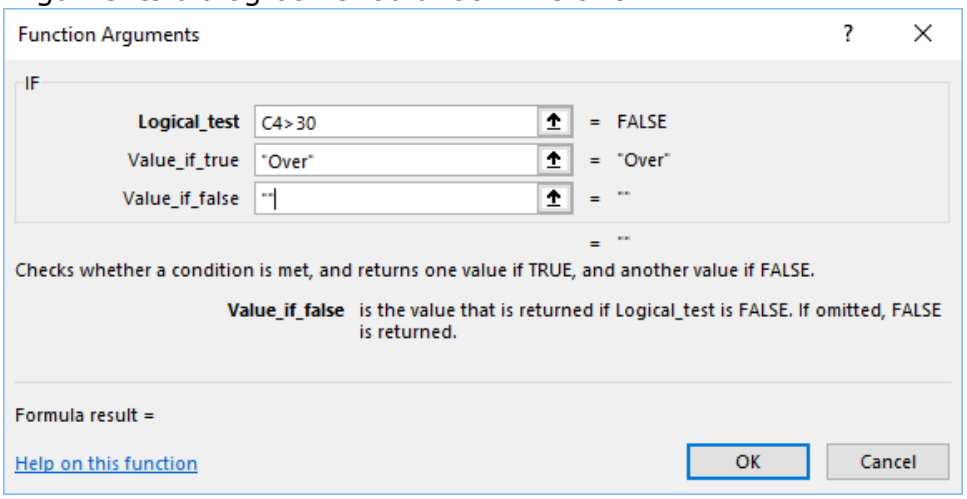
B. In cell **G5** create an **AVERAGEIF** formula to calculate the average **Amount** if the **Truck Type** is **General**. Use file: 421-Fuel Expenses_352237

Step 1: Select cell **G5**
Step 2: On the Formulas tab, in the **Function Library** section, click the **More Functions** drop-down menu
Step 3: Point to Statistical and select **AVERAGEIF**
Step 4: In the Range field in the Function Arguments dialog box, type: **B4:B25**
Step 5: In the Criteria field, type: **General**
Step 6: In the Average_range field, type: **C4:C25**
Step 7: Click the OK button

C. The IF function is a conditional formula used to test data against given criteria and then display data based on whether the test returns true or false.

For example, an IF function can display one message if a certain condition is true and a different message if the condition is false. A real-life example of an IF function could look like this: If it is sunny outside, I'm playing golf. Or else, I'll go bowling. Use file: 421-Fuel Expenses_ER_222240

1. Click cell D4.
2. On the Formulas tab on the ribbon, click the Logical button drop-down arrow and then click If. The Function Arguments dialog box will appear.
3. Click the Logical test field and type: C4 > 30 . This will check to see if the amount in C4 is over 30.
4. Click in the Value_if_true field and type: "Over"
5. Click in the Value_if_false field and type a pair of blank quotes. Your Function Arguments dialog box should look like this:

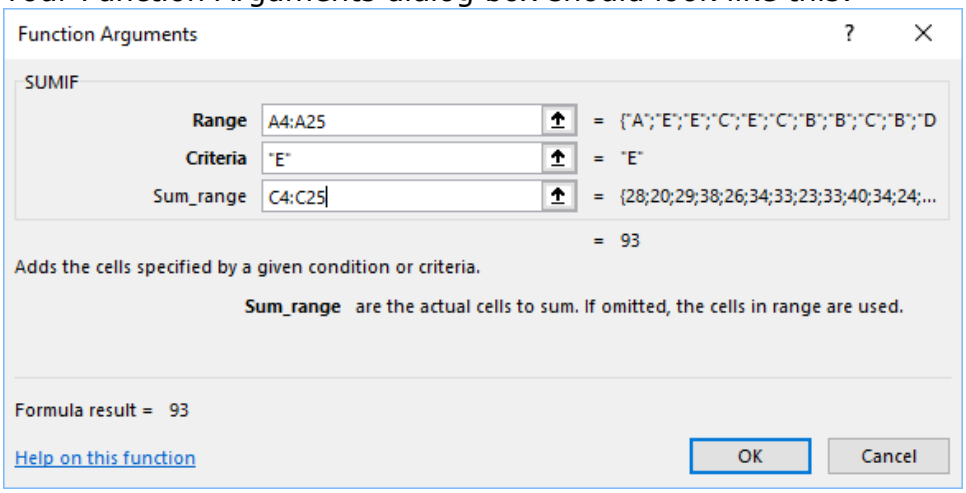


6. Click the OK button. Cell D4 should be blank.
7. AutoFill cell D4 down through cell D25.All of the cells with amounts over 30 should have the word Over in the respective adjacent cells.

D. The SUMIF function combines the functionality of the SUM function with the functionality of the IF function. It allows you to set criteria for what should be averaged from a range of data. For example, you may want to total the number of hours a food truck has been in use, but not all hours of all food trucks. A SUMIF function can work in this situation. Use file: 422-Fuel Expenses_502246

1. Click cell G4.
2. On the Formulas tab, click the Math & Trig button drop-down arrow and then click SUMIF. The function arguments dialog box will appear.

3. With the cursor in the Range field, click and drag to select cells A4 through A25.
4. To only include numbers from region E, click in the Criteria field and type: E
5. Click in the Sum_range field.
6. Click and drag to select cells C4 through C25
7. Your Function Arguments dialog box should look like this:



E. The AVERAGEIF function combines the functionality of the AVERAGE function with the functionality of the IF function. It allows you to set criteria for what should be averaged from a range of data. For example, you may want to average the amounts of orders from a single region, but not from all regions. An AVERAGEIF function can work in this situation. Use file: 423-Fuel Expenses_442251

1. Click cell G5.
2. To start an AVERAGEIF function, click the More Functions drop-down arrow on the Formulas tab, then Statistical, and then click AVERAGEIF.
3. In the Function Arguments dialog box, set the range to include cells B4 through B25 (the truck types).
4. Set the Criteria to: General
5. Set the Average_Range to cells C4 through C25.
6. Click the OK button.

F. The COUNTIF function combines the functionality of the COUNT function with the functionality of the IF function. It allows you to set criteria for what should be counted from a range of data. For example, you may want to count all instances of an order for a single product, not for all products. A COUNTIF function can work in this situation. Use file: 424-Fuel Expenses_212257

1. Click cell G6.
2. To start a COUNTIF function, click the More Functions drop-down arrow on the Formulas tab, then Statistical, and then click COUNTIF.

3. In the Function Arguments dialog box, set the range to cells B4 through B25 and the Criteria to: Gourmet
4. Click the OK button.

Lesson 5 - Use Text Functions Part I

A. Create a formula in cell **C2** of the **Trucks** worksheet that returns the first three letters of the **Truck** column. Use file: 431-Truck Names_092301

Step 1: Select cell **C2** of the **Trucks** worksheet
Step 2: On the **Formulas** tab, in the **Function Library** section, click the Text drop-down menu
Step 3: Click **LEFT**
Step 4: In the Text field type: A2
Step 5: In the Num_chars field type: 3
Step 6: Click the OK button

B. LEFT and RIGHT are basic text functions in Excel. The LEFT function extracts the left-most characters from text and the RIGHT function extracts the right-most characters from text. To use either function, you just need to know the cell you are referring to and the number of characters you want. If you do not specify a number of characters, the default setting of one character is used. Use file: 431-Truck Names_ER_552303

1. If necessary, click the Trucks worksheet tab.
2. Click cell C2.
3. To extract the three leftmost characters from the truck in cell A2, click the drop-down arrow on the Text button on the Formulas tab and then click LEFT. The Function Arguments dialog box will appear.
4. With the cursor in the Text field, click cell A2 to make the first truck the reference point for the function.
5. Click in the Num_chars field and type 3 to specify the retrieval of the three leftmost characters from the text.
6. Click the OK button. Cell C2 should have the letters GEN in the cell.
7. AutoFill cell C2 down to C21 to fill in the rest of the type codes.
8. Click cell D2.
9. To get the year of the truck (the two rightmost characters), click the drop-down arrow on the Text button on the Formulas tab and then click RIGHT. The Function Arguments dialog box will appear.
10. Set the Text field to cell A2 and the Num_Chars field to 2
11. Click the OK button.
12. AutoFill cell D2 down to D21 to fill in the rest of the two-digit years.

C. Whereas the LEFT and RIGHT functions extract the leftmost and rightmost characters from a cell, the MID function allows one to set a starting point and then extract the characters. Use file: 431a-Truck Names_162309

1. If necessary, click the Trucks worksheet tab.
2. Click cell E2.
3. Using the Text button on the Formulas tab, display the Function Arguments dialog box for the MID function.
4. Set the Text field to cell A2, the Start_num to 4, and the Num_Chars to 2 to get the fourth and fifth characters of the text.
5. Click the OK button. The number 14 should be in cell E2.
6. AutoFill cell E2 down to E21 to fill in the rest of the truck numbers.

Lesson 6 - Use Text Functions Part II

A. In cell **J2** of the **Supervisors** worksheet create a formula that returns the contents of cell **D2** in all uppercase. Use file: 431-Truck Names_542313

Step 1: Select cell **J2** of the **Supervisors** worksheet
Step 2: On the **Formulas** tab, in the **Function Library** section, click the Text drop-down menu
Step 3: Click **UPPER**
Step 4: Click to select cell D2
Step 5: Click the OK button

B. The UPPER function takes text and makes all of it uppercase. The LOWER function takes text and makes all of it lowercase. The PROPER function takes text and capitalizes the first letter of each word in a cell of text. These functions help to make text more consistent-looking compared to the way people may enter text onto an Excel worksheet. Use file: 432-Truck Names_292320

1. If necessary, navigate to the Supervisors worksheet.
2. Click cell F2.
3. On the Formulas tab, click the Text drop-down arrow and click LOWER to initiate the LOWER function.
4. To reference the region text, click in the Text field and type: A2
5. Click the OK button.
6. AutoFill cell F2 down to F7 to fix the casing on the remaining regions.
7. Click cell G2.
8. Use the Text drop-down arrow on the Formulas tab to locate and launch the PROPER function.
9. To reference the first name text, click in the Text field and type: B2

10. AutoFill cell G2 to H2 to apply the proper function to the last name in cell C2.
11. AutoFill the remaining first and last name columns.
12. Click cell I2.
13. Use the Text drop-down arrow on the Formulas tab to locate and launch the UPPER function.
14. To reference the truck text, click in the Text field and type: D2
15. AutoFill the remaining trucks.

C. CONCAT is a text function which combines two or more sets of text into a single cell. These sets of text include any punctuation and spacing in between items of text. For example, you may want to concatenate a last name, a comma, a space, and a first name into a cell. For this, the last name and first names are most likely in separate cells to start. Use file: 433-Truck Names_162326

1. In cell D2 of the Customers worksheet, use the Text button drop-down arrow on the Formulas tab to initiate a CONCAT function.
2. Click in the Text1 field.
3. Select cell A2 (the first customer last name).
4. Click in the Text2 field and type: ", " (include a space after the comma)
5. Click in the Text3 field.
6. Select cell B2 (the first customer first name).
7. Click the OK button.
8. AutoFill cell D2 down to cell D16 to concatenate the remaining names on the worksheet.
9. AutoFit the width of column D so that all of the names fit in the column.