LOOK-UP FUNCTIONS IN CALC

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Tutorial donated by Wayne Tschirhart

## Purpose

This tutorial explain how to use the Look-Up functions in Calc.

## Introduction

Spreadsheets are composed of individual cells that are like separate blocks of information. The cells can be used as a database. Businesses use the database-like structure of spreadsheets to produce invoices, track inventory, estimate costs, or manage budgets; all of these tasks require some form of look-up capability.

This tutorial assumes that you already have some experience using spreadsheets. If not, do the tutorials in Chapter One of Calc before doing this tutorial. Click on our website www.tutorialsforopenoffice.org. The path to reach Chapter One is: Home Page > Calc

# One Goal – Many Ways

There are six different look-up functions in Calc.

**LOOKUP**

**VLOOKUP**

**HLOOKUP**

**MATCH**

**INDEX**

**CHOOSE**.

A particular circumstance will determine which particular look-up(s) to use.

## LOOKUP

First you will do an actual LOOKUP then there will be an explanation of LOOKUP.

### Do A LOOKUP

1. Open a spreadsheet.
2. Enter **1** in Cell **E11**. (Click on cell **E11**, then press the **1** key (the number one key), then press **Enter**.)
3. Click on cell **E11** for the second time.
4. Use AutoFill to drag **E11** down **to E15**. (Click on the **handle** at the lower, right corner of cell **E11**, **hold** the click and **drag** the handle down to cell **E15**, then **release** the click)
5. Enter the letter **A** in **F11**, **B** in **F12**, **C** in **F13**, **D** in **F14**, and **E** in **F15**.
6. Click cell **A1**.
7. Enter 5 in **A1**, 4 in **A2**, **3** in **A3**, 2 in **A4**, and 1 in **A5**.
8. Select **B1**.
9. Enter **=LOOKUP(A1;E11:E15;F11:F15)**. (There is a semi-colon after A1 and E15. There is a colon after E11 and F11) (Press **Enter** for the formula to be accepted)
10. Select **B1** again and drag the formula to **B5**. (Click on the handle and drag the handle to cell B5) (**E** appears in **A1**, **D** appears in **A2**, **C** appears in **A3**, and **#N/A** appears in **A4 & A5**)

B1 has the formula =LOOKUP(A1;E1**1**:E1**5**;F1**1**:F1**5**)

B2 has the formula =LOOKUP(A1;E1**2**:E1**6**;F1**2**:F1**6**)

B3 has the formula =LOOKUP(A1;E1**3**:E1**7**;F1**3**:F1**7**)

B4 has the formula =LOOKUP(A1;E1**4**:E1**8**;F1**4**:F1**8**)

B4 has the formula =LOOKUP(A1;E1**5**:E1**9**;F1**5**:F1**9**)

Note that the cell A1 does not change and the other four cells increases by 1.

A1 has 5, A2 has 4, A3 has 3, A4 has 2, and A5 has 1

E11 has 1, E12 has 2, E13 has 3, E14 has 2, and E15 has 1

A is in F11  B is in F12  C is in F13  D is in F14  E is in F15

With books, the book's index is used to find the page where something is located. What is done is composed of two parts – The word(s) located in a list of words and a page number. **LOOKUP** uses the same principle to retrieve values from a list.
The syntax is: **LOOKUP(***Search criterion***;***Search vector***;R***esult_vector***)**

A later in this tutorial the following LOOKUP will be used;

**=LOOKUP(A1;E11:E15;F11:F15)**

E11:E15 is a range of cells (the five cells are in the E column on rows 11 through 15

the lookup searches the corresponding cell in the range E11 through E15 for the number entered that will be entered in A1 (Does F11:F15 have any effect in what is happening??)

Is a semi-colon ";" is used to separate the parts of the formula and the color ":" used to create a range?? The formula might be written A1 F11:F15 F11:F15

## Search Criterion

The ***Search criterion*** is the "topic" you are looking for.

## Search Vector

The ***Search vector*** is a range of cells in a row or column and is akin to a book index. **LOOKUP** compares the *Search criterion* (the "topic") to the values in the *Search vector* to find a match.

## Result_Vector

The ***result_vector*** is a range of cells that correlates to those of the *Search vector*. The data in the *result_vector* are the page numbers in our book example.

## Look-Up Table

The *Search vector* and *result_vector* can be located anywhere on the spreadsheet and even on different spreadsheets. It is most practical to place them in adjacent rows or columns. This arrangement is called a **look-up table**.

1. Click B1.
2. Highlight everything in the parenthesis, except A1
3. Press the key combination Shirt+F4. (The $ sign is inserted into all the cell names except A1 =LOOKUP(A1;$E$11:$E$15;$F$11:$F$15)
4. Click on the green check mark. (The cursor goes back to B1)
5. Drag B1 down to B5. (#N/A is replaced by B in B4 and A in B5.)

6. Select the range of cells F11:F15
7. Press Ctrl+x (The Cut keyboard shortcut) (A through E is deleted in cells F11 through F15)
8. Click on J2.
9. Click Edit > Paste Special (The "Paste Special" window appears)
10. Under "Options", select Transpose.
11. Click OK (A appears in J2, B appears in K2, etc for the five columns)
12. Click B1
13. Enter =LOOKUP(A1;E11:E15;J2:N2) (E still appears in B1
14. Click B1, then drag to B5. (B2 & B3 are blank, B4 & B5 have #N/A

## Relative Address

The five cells in column B has the letters, in the same order, as the letters that are in the five cells in Column D. When you copied the formula from cell B1 into the other 4 cells in column B, the software maintain the relationships between the cells and the formulas. This is called **relative addressing**. In the formula just used in this tutorials, the formula said copy the cell that is located two columns to the right and five rows down from this cell. The letter A" is located 2 columns to the right and 5 rows below B1. The formula, in the other 4 cells in column B, is says the same thing - copy the cell that is located two columns to the right and five rows down from this cell.

## Absolute Address

1. Change the numbers in column A so that A1 is 5, A2 is 4,A3 is 3, A4 is 2, and A5 is 1. ( Celle B4 and B5 now has "#N/A" in them)
2. Click on **B1**.
3. Click on the **Input Line**. (Add image showing colors of cell borders and color of numbers and letters)
4. Press **Esc**.
5. Click on **B2**.
6. Click on the **Input Line**. (Add image showing colors of cell borders and color of numbers and letters)
7. Press **Esc**.

8. Repeat Steps 1-6 for the remaining cells.

The colored boxes around the look-up table shift one cell down every time. The solution to this behavior is **absolute addressing**. Absolute addressing tells the software, "Don't mess with the addresses of these cells!" You make a cell reference absolute by placing a dollar sign ($) before the column letter and row number ($A$1). If you want to anchor the column only, put the $ before the letter ($A1). If you want to anchor the row only, put the $ before the number (A$1). Edit the formulas in your worksheet as follows:

1. Select **B1**.
2. Highlight everything in the parenthesis, except **A1;**
3. Press the key combination **Shift+F4**. (The $'s are inserted automatically.)
4. Click the **green** check mark.
5. Drag the updated formula to **B5**.

**Note**: If you press Shift+F4 a second time, you will get something like A$1. If you press Shift+F4 a third time, you will get $A1.

There, it's fixed! All the colors match the numbers as defined by the look-up table. Clear column B and try this:

1. Select **F11:F15**. (The lookup table colors.)
2. Press **Ctrl+x**. (The **Cut** keyboard shortcut.)
3. Click on **J2**.
4. Click **Edit > Paste Special...**
5. Check **Transpose** on the bottom left.
6. Click **OK**.
7. Enter **=LOOKUP(A1;E11:E15;J2:N2)** in **B1**.
8. Use **Shift+F4** to make the appropriate cell references absolute.
9. Drag the formula to **B5**.

What do you think? Pretty Cool? Now that you have used **LOOKUP**, you need to understand how it works.

**LOOKUP** keeps an internal count of the number of cells in the *Search vector*. If we use **3** as the *Search criterion,* **LOOKUP** knows that **3** is in the **3rd** cell of the *Search vector*. **LOOKUP** then goes to the *result_vector* and returns the value in the **3rd** cell in that range (Purple); that's why you can place the vectors anywhere. If the *Search criterion* lies between two *Search vector* values, **LOOKUP** will return the lower value. Confused? Enter 4.5 in A2. The color (red) did not change because **LOOKUP** couldn't find 4.5. **LOOKUP** stopped searching when it found 5 and used the next lowest value (4). If the *Search criterion* is greater than all of the *Search vector* values, **LOOKUP** will return the last value in the list. If the *Search criterion* is less than all of the *Search vector* values, **LOOKUP** will return **#N/A**.

# VLOOKUP & HLOOKUP

There are lots of situations where several columns are related to one index value. This is where **VLOOKUP** and **HLOOKUP** come into play. I combined the discussion of these functions because they are identical, except for the way they search. The **VLOOKUP** and **HLOOKUP** functions search ***arrays***. An array is a block of cells similar to a data table in a book. Suppose you want to convert 70.5 degrees Fahrenheit to degrees Celsius. You would find a conversion table, move down the left column until you found 70, then you would move along the row until you found to the .4 column and read the temperature in Celsius. That's how **VLOOKUP** works. **HLOOKUP** works the opposite way; it searches the top row first, then it searches down the appropriate column. The syntax for the functions is:

## V(H)LOOKUP(*Search criterion*;*array*;*index;sort order*).

You already know what the *Search Criterion* is, so I won't repeat the definition. The ***index*** is the $n^{th}$ column (row for **HLOOKUP**) of the array. ***Sort order*** is a boolean (TRUE or FALSE) parameter that tells **V(H)LOOKUP** whether the first column (row) is sorted in ascending order or not. The default value is **TRUE** and can be omitted; otherwise, type **FALSE** for *sort order*. If the *Search Criterion* lies between two values in the first column (row), **V(H)LOOKUP** will respond just like **LOOKUP**; it will return the lower value. Let's make make a fast-food receipt to see how they work.

1. Rename **Sheet1** to **LOOKUP**. (Look under Format > Sheet...)
2. Bring up **Sheet2** and rename it **VLOOKUP**.
3. Enter the information in the table below. Begin in cell **H1**.

| | | |
|---|---|---|
| 1 | Hamburger | $2.25 |
| 2 | Cheeseburger | $2.50 |
| 3 | Bacon burger | $2.75 |
| 4 | Small Fries | $1.00 |
| 5 | Medium Fries | $1.25 |
| 6 | Large Fries | $1.50 |
| 7 | Small Drink | $0.75 |
| 8 | Medium Drink | $0.90 |
| 9 | Large Drink | $1.25 |

4. Type **Order ID** in **A1**.
5. Type **Menu Item** in **B1**.
4. Type **Price** in **C1**.
5. Click on **B2**.
6. Enter **=IF($A2="";"";VLOOKUP($A2;$H$1:$J$9;2))**. (I'll explain **IF** soon.)
7. Drag the formula to **C2**. (Did you notice the $A2?)

8. Change the last number in the parenthesis in **C2** from **2** to **3**.

9. Select **B2** and **C2**.

10. Drag the selection to row **15**.

When I was preparing this tutorial, I got a bunch of **#N/A**'s because there was no data in the A column. They were ugly, so I decided to introduce you to the logical function **IF**. In my experience, look-up functions and **IF** are almost always used together. When you use look-up functions, you will see a lot of **#N/A**'s unless you hide them.. The **IF** statement (function) is handy if you want to set up a blank form or calculation sheet; especially if someone else is going to use it. **IF** may look scary, but it's really simple. Here's the syntax:

### IF(*Test; Then_value; Otherwise_value*)

The ***Test*** is any logical expression that returns true or false. The formula in Steps 6 and 7 tell Calc to leave the cells in column B and C blank if the A column is blank; otherwise, show the result of **VLOOKUP**. Dress the receipt up a little:

11. Put a border along the bottom of **A1:C1**.

12. Put another border along the bottom of **A15:C15**.

13. Format column **C** for currency.

14. Type **Subtotal:** in **B16**. (Align right.)

15. Enter **=sum(C2:C15)** in **C16**.

16. Type **Tax:** in **B17**. (Align right.)

17. Enter **=C16*0.05** in **C17**. (5% sales tax)

18. Type **Total:** in **B18** and make it **bold**. (Align right.)

19. Enter **=SUM(C16:C17)** in **C18**.

20. Put a border around **C18**.

1. Order lunch. (Enter some Order ID values to test the functionality.)
2. Now enter **10**, **0**, and a number like **5.4** in the **Order ID** column and check the results. (Note the responses to 0 and 5.4.)
3. *(Challenge Step) If you are feeling really good about the **IF** statement, make the Subtotal (**C16**), Tax (**C17**), and Total (**C18**) cells blank when there are no entries in the **A** column! My solution is hidden in the blank space below (There are several solutions).*

C16: =IF(SUM($C$2:$C$15)=0;"";SUM(C2:C15))

C17: =IF(C16="";"";C16*0.05)

C18: =IF(C17="";"";SUM(C16:C17))

Before you go to the next topic, transpose the look-up array and change **VLOOKUP** to **HLOOKUP**. It's a good exercise to prove to yourself that it works!

## MATCH & INDEX

Individually, the capabilities of these functions are not very impressive; however,

they form a powerful tool to look up information when they are combined. I'll start with **MATCH**.

**MATCH** is used to find the **position** of a value in a row or column. For example, if you have a column of 2000 words starting with *S* and you are looking for "Special", **MATCH** may return a number like 1670 (1670th row in the column). The syntax is:

**MATCH(*search_criterion;lookup_array;type*)**.

The ***lookup_array*** is a single column or row of cells. ***Type*** is a sort parameter that tells the function how the column or row is sorted; it can be 1 (ascending), 0 (exact match), or -1 (descending). The default is 1 (ascending). If you use the exact match option and there are multiple instances, **MATCH** will return the position of the first instance. If the *search_criterion* falls between two entries in the column or row, the lower position is returned.

**INDEX,** on the other hand, returns the **contents** of a given cell address. The syntax is:

**INDEX(*reference;row;column*).**

The ***reference*** is a range or array of cells. The other parameters are self-explanatory. Are any light bulbs starting to glow?

Here's a scenario: You are the Vice President of a company. You hear about a certain employee and you want to find information on that person. The company uses Calc as its database and stores employee data in the format shown in the table below (I only listed the Department Heads to keep things simple).

| Employee ID | Last Name | First Name | Department | Employees |
|---|---|---|---|---|
| 1021 | Avery | Walter | Dispersing | 12 |
| 2022 | Daniels | Mary | Warehouse | 150 |
| 1549 | Fairchild | Cynthia | Accounting | 10 |
| 3115 | Moore | Jack | Shipping | 109 |
| 4752 | Simpson | Suzanne | Receiving | 200 |
| 2503 | Turner | Mark | Engineering | 3 |
| 2278 | Williams | Robert | Sales | 30 |
| 2827 | Garland | Priscilla | Public Relations | 5 |
| 2680 | Barton | Kyle | Advertising | 9 |
| 1250 | Laramie | Sheila | Marketing | 27 |

Enter the table in a new worksheet (include the column headings). Start in cell P1 so you can't see the table later on. When you've got the data entered, sort it by **Employee ID** in ascending order. This is how you sort:

1. Select **P2:T9**.
2. Click **Data > Sort...**
3. Sort by **Column P**.

4. Click **Ascending**.
5. Click **OK**.

Now set up a simple query form.

6. Select **A1** and type **Find:** (Align right.)
7. Type **First Name:** in **A3.** (Align right.)
8. Type **Department:** in **A4.** (Align right.)
9. Type **No. Employees** in **A5.** (Align right.)
10. Select **B3.**
11. Enter **=INDEX($P$2:$T$9;MATCH($B$1;$Q$2:$Q$9;0);3)**.
12. Copy the formula to **B4** and change the last number in **B4** from **3** to **4**.
13. Select **B5**.
14. Enter
    **=VLOOKUP(INDEX($P$2:$T$9;MATCH($B$1;$Q$2:$Q$9;0);1);$P$2:$T$9;5))**.

I had you enter the last formula that way because I wanted to show you the power of nesting (nesting means using functions in functions). Nesting is really nice, but It can get pretty crazy.

15. Type **Turner** into **B2**.
16. Press **Enter**.

Did you notice that we never exposed an ID number? How did we do that if **VLOOKUP** needs the **Employee ID** to perform its search? We worked around the **Employee ID** by substituting it with the **INDEX-MATCH** combination, thus keeping private information secure and giving **VLOOKUP** what it needs! If you really want to make sure no one can see the ID numbers, hide the columns.

1. Select columns **P** through **T**.
2. Click **Format > Column > Hide.**

Let me explain what's happening. **MATCH** is using the text in **B1** to identify a row position in the array (Turner is in row **4**). **INDEX** then returns the data in the **4th** row and the **3rd** column to cell **B3** (**First Name**). **INDEX** also returns the data in the **4th** row and the **4th** column to cell **B4** (**Department**). In the last formula, **INDEX** returns data from the **4th** row and **1st** column, which is passed to **VLOOKUP** as the *Search criterion*. **VLOOKUP** uses the *Search criterion* to get data in the **5th** column (**No. Employees**). That's all there is to it!

If you want the practice, wrap everything with **IF** to blank the three result cells when the **Last Name** field is blank. When you're done, rename the worksheet **MATCH** and save your work, then we'll move on to the **CHOOSE** function.

## CHOOSE

You'll be happy to hear that the **CHOOSE** function is really easy. The syntax is:

## CHOOSE(*Index; value1;...value30*).

***Index*** is a number from 1 to 30. The ***value*s** are an embedded list; usually text. **CHOOSE** is useful when you want to look up things like days of the week, months of the year, colors of the rainbow, or any other categorical data.

**CHOOSE** differs from the other look-up functions in that there is always a one-to-one relationship between the *index* values and the list values. Let's see how it works by building a teacher's grade book.

1. Insert a **new** worksheet. (Insert > Sheet...)
2. Rename the worksheet **CHOOSE**.
3. Copy the **Last Name** and **First Name** columns from the **MATCH** worksheet to the **CHOOSE** worksheet.
4. Sort them by **Last Name** in **ascending** order.
5. AutoFill cells **C1:L1** with numbers **1-10**.
6. Type **Average** in **M1**.
7. Select the top row.
8. Format the cells with a **bold** font; background color of **Gray 10%**; **center** alignment; and a bottom space of **3.00pt**.
9. Insert a row between each name.
10. Enter **0** in **R1**.
11. Enter **60** in **R2**.
12. Enter **65** in **R3**.
13. Select **R2:R3**.
14. Drag the selection to **R9**. (AutoFill with increments of 5.)
15. AutoFill **S1:S9** with numbers **1-9**.
16. Select **C3**.
17. Enter
    **=IF(C2="";"";CHOOSE(LOOKUP(C2;$R$1:$R$9;$S$1:$S$9);"F";"D";"D+";"C";"C+";"B";"B+";"A";"A+"))**.
18. Drag the formula to **M3**.
19. Copy line **3** to line **5,** line **7...,** line **17**.
20. Select **Light Blue** as the **font color** for the rows in Step 19.
21. Select **M2**.
22. Enter **=AVERAGE(C2:L2)**.
23. Copy **M2** to **M4, M6,...M16**.
24. Format the table to suit your tastes.
25. Enter **61** in **C2**. (The letter grade should be D.)
26. Enter more grades to make sure everything works correctly.

27.Save your work.

As you can see, the **CHOOSE** function has a lot of potential. You could use it with various lists to add cool stuff to your spreadsheet. Here's a fun application: Do you want to know the day of the week you were born on?

1. Click on **B27**
2. Enter **=CHOOSE(WEEKDAY(A27);"Sunday";"Monday";"Tuesday";**

   "Wednesday";"Thursday";"Friday";"Saturday").
3. Enter your birthday in **A27**.

You can also enter cell references instead of typing text. An alternative to the formula above is:

**=CHOOSE(WEEKDAY(A27);U1;U2;U3;U4;U5;U6;U7).**

You would put the days of the week into the cells, beginning with Sunday in cell U1. The same could be done with the grade list. The cell references must be individual cells; **CHOOSE** will not accept cell ranges.

## What's In The Middle?

We have discussed what happens when a *Search Criterion* falls between two *Search vector* values; the look-up functions return the lower value. But what if we **need** a *result_vector* value between two *Search vector* values? What do you do? You **interpolate**.

You interpolate numbers almost daily; however, most of the time you do it in your head without stopping to think **how** it's done. For instance, what number is halfway between 0 and 5? The number 2.5 probably comes to mind immediately. Most of us know that from experience, but how do you calculate other intermediate values?

Before you can interpolate between values you have to know something about the data. Some data sets are linear, which means that if you were to plot them on a chart they would form a straight line. Other data sets are nonlinear, meaning that a plot of the data would form a curved line. We're going to keep things simple by assuming that we can interpolate values by connecting data points with straight lines, even if the points form a curve (this assumption is good for most common data you will encounter). Using this assumption to get intermediate values is called **linear interpolation**. If the assumption is not valid, then you have to use **nonlinear interpolation**, which is a topic too complex to cover in this tutorial.

Now let's talk about lines. If you think way back to your grade school days (that's a long, long time for some of us), you probably learned that if you know two points on a line, you can find any other point. Do you recall something like that? You may also recall that the equation of a line has the general form of ***y = mx + b***, where ***m*** is the slope (rise over run) of the line and ***b*** is the y-intercept (the point where the line crosses the y axis). The line equation is the basis for the method I am going to present. Let's look at some data.

1. Add a new sheet to the workbook you are using for this tutorial.

2. Rename it **Interp**.
3. Enter the data below, beginning in **F1**.

| | |
|---|---|
| 1 | 7 |
| 2 | 11 |
| 3 | 17 |
| 4 | 25 |
| 5 | 35 |
| 6 | 47 |
| 7 | 61 |
| 8 | 77 |
| 9 | 95 |
| 10 | 115 |
| 11 | 137 |
| 12 | 161 |
| 13 | 187 |
| 14 | 215 |
| 15 | 245 |
| 16 | 277 |
| 17 | 311 |
| 18 | 347 |
| 19 | 385 |
| 20 | 425 |

4. Add a chart and look at the graph of the data points. (Definitely not a straight line!)

**Note**: The data are the result of using the quadratic equation $\mathbf{y = x^2 + x + 5}$ if you want to check your answers.

What is the *result_vector* value for a *Search criterion* of 6.5? The exact answer from the equation is 53.75. If you calculated it by hand, you would do this way:

$$\frac{(61-47)}{(7-6)} * (6.5-6) + 47 = 54$$

If you look at the calculation closely you will see that it is the equation of a line in the form of ***y = m*x + b***. Also note the difference between the exact answer and the interpolated value. There is always error involved when you interpolate. In this case the difference is only 0.46%, which is negligible.

So what? What does that have to do with using look-up functions to interpolate between values? Well, now you have a pattern to follow! I've broken it down below:

1. Assume we enter 6.5 in **A1**.

2. **(61-47)**: **INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20)+1;2) – LOOKUP(A1;$F$1:$F$20;$G$1:$G$20)**. (Note the use of MATCH(...)+1 to get 61.)
3. **(7-6)**: **INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20)+1;1) – INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20);1**).
4. **(6.5-6)**: **A1-INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20);1)**.
5. **47**: **LOOKUP(A1;$F$1:$F$20;$G$1:$G$20)**.
6. Put it all together in **B1**.
7. Enter **=(((INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20)+1;2) – LOOKUP(A1;$F$1:$F$20;$G$1:$G$20)))/(INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20)+1;1) – INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20);1)))*(A1-INDEX($F$1:$G$20;MATCH(A1;$F$1:$F$20);1))+LOOKUP(A1;$F$1:$F$20;$G$1:$G$20)**.

Yes!!! The answer in B1 is 54! Enter more values in the A column, then drag the formula down. You should get good answers down the B column. If you have more than one column of data, you could use **VLOOKUP** and **HLOOKUP** instead of **LOOKUP**; just make sure that your column numbers in **INDEX** and **MATCH** point to the appropriate column(s).

## Summary

Congratulations! You have learned to use six different look-up techniques: **LOOKUP**, **VLOOKUP**, **HLOOKUP**, **MATCH**, **INDEX**, and **CHOOSE**. In addition, you learned how to use the **IF** statement to control how empty cells behave, how to nest functions to supercharge your look-up capabilities, and how to to get *result_vector* values between *Search vecto*r values. The skills you learned will make you a valuable spreadsheet user. Keep up the good work. Thanks for giving me your time and attention. Good Luck!

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