

Microsoft Excel 2007

Lesson 2: Filling and Copying Cells

In this and the following lessons, we will assume that you have just been hired by a store with cash registers in four different locations. Your manager has asked you to see if any of the registers are being used less than the others. You tally the receipts at each register for a week and get the following results:

	1	2	3	4
Monday	\$2,032	\$1,227	\$2,143	\$566
Tuesday	\$1,785	\$1,567	\$2,271	\$803
Wednesday	\$2,237	\$1,454	\$1,983	\$965
Thursday	\$2,876	\$1,981	\$3,249	\$327
Friday	\$2,118	\$1,527	\$2,671	\$543
Saturday	\$3,873	\$2,173	\$4,371	\$699
Sunday	\$ 877	\$ 425	\$1,655	\$158


We will analyze and display this data with a spreadsheet.

Downloading Spreadsheets

I have already prepared a spreadsheet containing this data. To download this file, open a web browser and go to my web site at <http://webs.wofford.edu/whisnantdm>

Choose the link to the **Computer Science 101** page and look for the links to the Excel lessons.

Click on the link to **Excel File for Lessons** .

- [Excel: Files for Lessons](#) 
- [Excel 1: Introduction](#)
- [Excel 2: Filling and Copying Cells](#)
- [Excel 3: Appearance](#)
- [Excel 4: Functions](#)
- [Excel 5: Organizing and Viewing Selected Data](#)
- [Excel 6: Printing](#)
- [Excel 7: Charts and Comments](#)
- [Excel 8: Multiple Worksheets and Logical Functions](#)
- [Excel: Review](#)

You will see two spreadsheets in the Excel_Files folder – Example.xlsx and Review.xlsx. You will need both of them eventually.

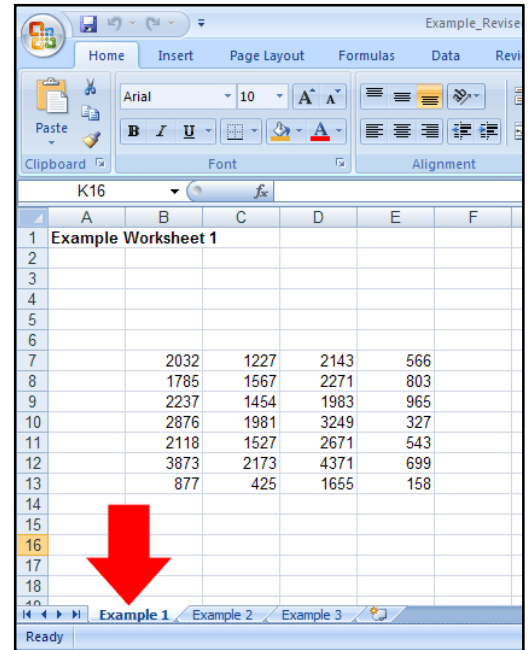
Right-click on the file name **Example.**” Choose **Save As** from the menu that pops up. Save the file on your H: drive.

Do the same for **Review**.

When you have saved both spreadsheets on your H: drive, open **Example**.

Note that the Example spreadsheet has three tabs at the bottom named "Example 1," "Example 2," and "Example 3."

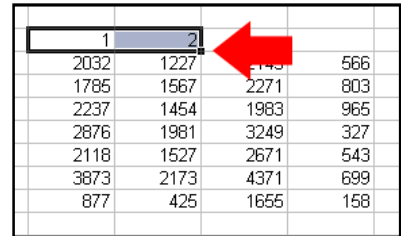
If the Example 1 worksheet is not displayed, click on the **Example 1** tab.



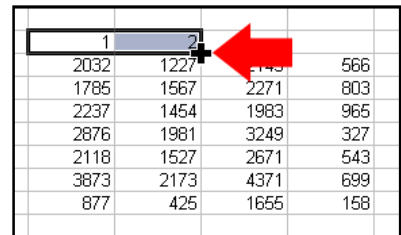
Filling a Series of Cells

First we want to label the columns with the numbers corresponding to each register, 1 through 4. Enter the number "1" in cell B6 and "2" in cell C6.

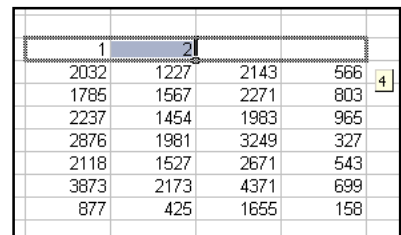
We could enter the other two numbers, but this is an opportunity to illustrate how to fill a series of numbers into adjacent cells. Holding the left mouse button down, sweep the cursor over cells B6 and C6 to **select** these cells. You should notice a small darkened square, the **Fill Handle**, in the lower right corner of the selected area.



Move the cursor so that it is directly over the Fill Handle for the selected area. The cursor will look like a dark cross when it is in the proper location.



Holding the left mouse button down, "grab" the Fill Handle and pull the selected cells to the right so that four cells, B6 through E6, are selected.



When you release the mouse button the two empty cells will be filled with the next two terms in the series.

	1	2	3	4
	2032	1227	2143	566
	1785	1567	2271	803
	2237	1454	1983	965
	2876	1981	3249	327
	2118	1527	2671	543
	3873	2173	4371	699
	877	425	1655	158

Next, enter “Monday” in cell A7 and “Tuesday” in cell A8.

Select both cells.

5					
6		1	2	3	4
7	Monday	2032	1227	2143	566
8	Tuesday	1785	1567	2271	803
9		2237	1454	1983	965
10		2876	1981	3249	327
11		2118	1527	2671	543
12		3873	2173	4371	699
13		877	425	1655	158
14					

“Grab” the Fill Handle of the selected area and pull it down so that it includes cells A7 through A13.

When you release the mouse button, you will see that the days of the week have been filled in.

5					
6		1	2	3	4
7	Monday	2032	1227	2143	566
8	Tuesday	1785	1567	2271	803
9	Wednesday	2237	1454	1983	965
10	Thursday	2876	1981	3249	327
11	Friday	2118	1527	2671	543
12	Saturday	3873	2173	4371	699
13	Sunday	877	425	1655	158
14					

Enter “Day” in cell A6 and “Register” in cell D5.

Save the spreadsheet.

Copying and Pasting Formulas

We would like to calculate the total from all four registers for each day. Click on cell F7 and use the **AutoSum** button on the standard toolbar to calculate the sum.

You should see the formula =SUM(B7:E7) in the cell.

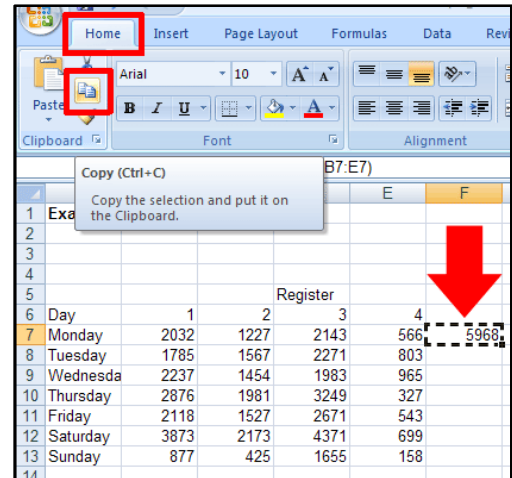
Press **Enter** to enter the sum.

1	A	B	C	D	E	F	G
2	Example Worksheet 1						
3							
4							
5				Register			
6	Day	1	2	3	4		
7	Monday	2032	1227	2143	566	=SUM(B7:E7)	
8	Tuesday	1785	1567	2271	803	SUM(number1, [numb	
9	Wednesda	2237	1454	1983	965		
10	Thursday	2876	1981	3249	327		
11	Friday	2118	1527	2671	543		
12	Saturday	3873	2173	4371	699		
13	Sunday	877	425	1655	158		
14							

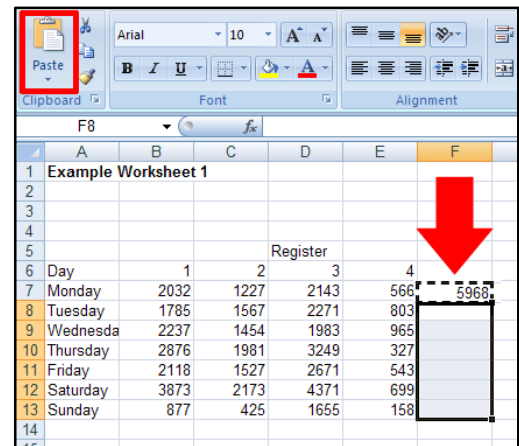
We could use AutoSum, one cell at a time, to calculate the sums for the other cells in this column, but it is easier to copy the formula in cell F7 and paste it into the other cells.

Select cell F7 again and click on the **Copy** icon in the **Home** ribbon.

You will see cell F7 outlined with a dotted line when it has been selected to copy.

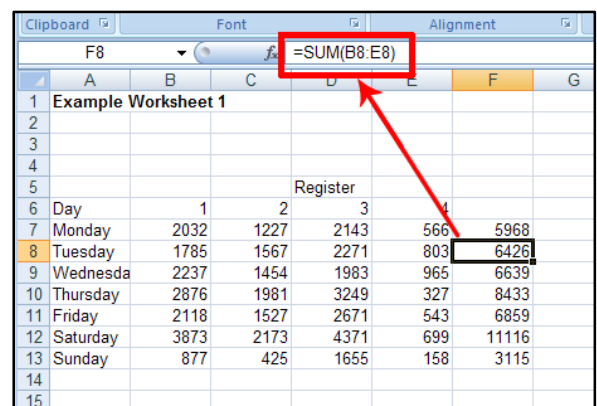


Select cells A8 through A13. Then click on **Paste** in the **Home** ribbon.



If you click on one of the selected cells, you will see that the **formula** in the cell has been copied rather than the value.

Notice that the range of cells in the formula has been changed to correspond with the row into which it has been pasted.



For example, the formula in cell F7 was `=SUM(B7:E7)`. When the formula is pasted in cell F8, which is in row 8 rather than row 7, the formula becomes `=SUM(B8:E8)`.

Entering the SUM Function

We also want to add up the amounts for each register over the entire week. Click on cell B14, where we will place the total for cash register # 1. *We cannot use the AutoSum button to calculate this total correctly. Why is this?*

Instead, enter `=SUM(` in this cell *with no space in front of the equal sign*. Then sweep the cursor over cells B7 through B13 with the left mouse button depressed to select the range for the sum.

Day	1	2	3	4	
Monday	2032	1227	2143	566	5968
Tuesday	1785	1567	2271	803	6426
Wednesday	2237	1454	1983	965	6639
Thursday	2876	1981	3249	327	8433
Friday	2118	1527	2671	543	6859
Saturday	3873	2173	4371	699	11116
Sunday	877	425	1655	158	3115

Close the function with a right parentheses `=SUM(B7:B13)` and press the **Enter** key. You should see the total for register # 1 (15798) in the cell.

Copy the function in cell B14 and paste it into cells C14 through F14.

Enter the phrases “Daily Total” in cell F6 and “Register Total” in cell A14.

Day	1	2	3	4	Daily Total
Monday	2032	1227	2143	566	5968
Tuesday	1785	1567	2271	803	6426
Wednesday	2237	1454	1983	965	6639
Thursday	2876	1981	3249	327	8433
Friday	2118	1527	2671	543	6859
Saturday	3873	2173	4371	699	11116
Sunday	877	425	1655	158	3115
Register Total	15798	10354	18343	4061	48556

Changing the Width of a Column

Note that column A is not wide enough for “Register Total” to fit. Place the cursor on the line in the gray area separating the A and B column labels. When it is in the proper place, the cursor shape will become a line with two horizontal arrows as shown in the illustration at the right. Hold the mouse button down and “pull” the right border of the A column to the right, widening the column.

Day	1	2	3	4	Daily Total
Monday	2032	1227	2143	566	5968
Tuesday	1785	1567	2271	803	6426
Wednesday	2237	1454	1983	965	6639
Thursday	2876	1981	3249	327	8433
Friday	2118	1527	2671	543	6859
Saturday	3873	2173	4371	699	11116
Sunday	877	425	1655	158	3115
Register Total	15798	10354	18343	4061	48556

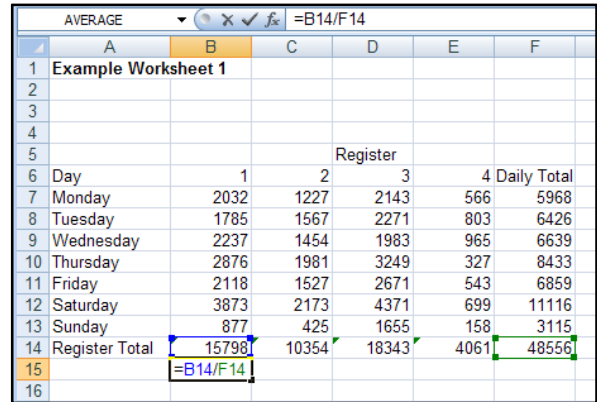
Entering an Arithmetic Formula

You can do calculations with cells and arithmetic operations (+, -, *, /) without using functions. For example, the weekly total for register # 1 is \$15,798 in cell F14 and the total for all the registers is \$48,556 in cell B14. We can calculate the percent that register # 1 has contributed as the ratio of the two cells, B14/F14.

Move the cursor to cell **B15**. Spreadsheet formulas are entered in terms of cells, with an equal sign to specify that it is a formula. For example, to calculate the percent that register #1 has contributed we would enter the following formula in cell B15 *without a space before the equal sign in the formula*

=B14/F14

Press **Enter** to calculate the formula.



The screenshot shows an Excel spreadsheet with the following data:

Day	1	2	3	4	Daily Total
Monday	2032	1227	2143	566	5968
Tuesday	1785	1567	2271	803	6426
Wednesday	2237	1454	1983	965	6639
Thursday	2876	1981	3249	327	8433
Friday	2118	1527	2671	543	6859
Saturday	3873	2173	4371	699	11116
Sunday	877	425	1655	158	3115
Register Total	15798	10354	18343	4061	48556

Cell B15 contains the formula **=B14/F14**.

Copying a Formula Holding a Cell Constant

We want to copy the formula in cell B15 into cells C15 through E15, but it appears that we have a problem. The formulas in the cells should be the following:

In B15: **=B14/F14**
In C15: **=C14/F14**
In D15: **=D14/F14**
In E15: **=E14/F14**

The problem is that, when we copy the formula in cell B15 and paste it into the other cells, both the numerator and denominator in the ratio will change to match the rows and columns for the new cell:

In B15: **=B14/F14**

After copying the formula in B15 and pasting:

In C15: **=C14/G14**
In D15: **=D14/H14**
In E15: **=E14/I14**

We need a way of entering the formula in B15 so that the “F” in F14 will not change when the formula is copied. We can do this by making the “F” an **absolute reference**.

Placing a \$ in front of a row or column reference in a formula designates it as an absolute reference, which will not change when the formula is copied and pasted.

The examples below illustrate how absolute references work.

1) $=A1/D1$ in cell B4. Copy it and paste it into cell C5. Formula becomes $=B2/E2$.

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4					
5					
6					
7					

B4 formula: $=A1/D1$
Value in B4: 0.2

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4		0.2			
5					
6					
7					

C5 formula: $=B2/E2$
Value in C5: 0.5

2) $=A1/\$D1$ in cell B4. Copy it and paste it into cell C5. Formula becomes $=B2/\$D2$.

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4					
5					
6					
7					

B4 formula: $=A1/\$D1$
Value in B4: 0.2

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4		0.2			
5					
6					
7					

C5 formula: $=B2/\$D2$
Value in C5: 0.571429

Because the "D" is an absolute reference, it does not change

3) $=A1/D\$1$ in cell B4. Copy it and paste it into cell C5. Formula becomes $=B2/E\$1$.

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4					
5					
6					
7					

B4 formula: $=A1/D\$1$
Value in B4: 0.2

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4		0.2			
5					
6					
7					

C5 formula: $=B2/E\$1$
Value in C5: 0.666667

Because the "1" is an absolute reference, it does not change.

4) $=A1/\$D\1 in cell B4. Copy it and paste it into cell C5. Formula becomes $=B2/\$D\1 .

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4					
5					
6					
7					

B4 formula: $=A1/\$D\1
Value in B4: 0.2

	A	B	C	D	E
1	1	2		5	6
2	3	4		7	8
3					
4		0.2			
5					
6					
7					

C5 formula: $=B2/\$D\1
Value in C5: 0.8

Because both the "D" and the "1" are absolute references, they do not change.

In our particular example, we are going to copy the formula (=B14/F14) in cell B15 and paste it into cells C15, D15, and E15. We do not want the “F” in “F14” to change. To accomplish this, the formula in cell B15 should be entered as **=B14/\$F14**

	A	B	C	D	E	F
1	Example Worksheet 1					
2						
3						
4						
5						
6	Day	1	2	3	4	Daily Total
7	Monday	2032	1227	2143	566	5968
8	Tuesday	1785	1567	2271	803	6426
9	Wednesday	2237	1454	1983	965	6639
10	Thursday	2876	1981	3249	327	8433
11	Friday	2118	1527	2671	543	6859
12	Saturday	3873	2173	4371	699	11116
13	Sunday	877	425	1655	158	3115
14	Register Total	15798	10354	18343	4061	48556
15		=B14/\$F14				
16						

Enter **=B14/\$F14** into cell B15. Copy the contents of B15 into C15, D15, E15 and F15.

	A	B	C	D	E	F
1	Example Worksheet 1					
2						
3						
4						
5						
6	Day	1	2	3	4	Daily Total
7	Monday	2032	1227	2143	566	5968
8	Tuesday	1785	1567	2271	803	6426
9	Wednesday	2237	1454	1983	965	6639
10	Thursday	2876	1981	3249	327	8433
11	Friday	2118	1527	2671	543	6859
12	Saturday	3873	2173	4371	699	11116
13	Sunday	877	425	1655	158	3115
14	Register Total	15798	10354	18343	4061	48556
15		33%	21%	38%	8%	100%
16						

Enter the word “Percent” in cell A15 to label the row.

You probably will note that the numbers in row 15 already are formatted as percents.

Save the worksheet.

	A	B	C	D	E	F
1	Example Worksheet 1					
2						
3						
4						
5						
6	Day	1	2	3	4	Daily Total
7	Monday	2032	1227	2143	566	5968
8	Tuesday	1785	1567	2271	803	6426
9	Wednesday	2237	1454	1983	965	6639
10	Thursday	2876	1981	3249	327	8433
11	Friday	2118	1527	2671	543	6859
12	Saturday	3873	2173	4371	699	11116
13	Sunday	877	425	1655	158	3115
14	Register Total	15798	10354	18343	4061	48556
15	Percent	33%	21%	38%	8%	100%
16						