Formulas in Excel

BACKGROUND INFORMATION FOR LEARNERS

One eminent feature of Excel is the ability to compute or create mathematical formulas and functions. It is easier than making computations manually. Excel's environment became receptive and lively once you use formulas, it automatically updates when you change a data.

Examples of calculations that can be done in excel are:

- Totals
- Subtotals
- Average
- Standard Deviation

In Excel, calculation can be specified by *formulas* and *function.*

Formulas are *self-defined* instructions in doing calculations.

Functions are *pre-defined* formulas that is already in Excel

Both formulas and functions should be entered in a cell. They should always start with an equal sign "=".

ENTERING FORMULA

After the equal sign, a formula includes the addresses of the cells whose values will be manipulated with appropriate operands placed in between. The operands are the standard arithmetic operators:

Operator	Meaning	Example
+	Addition	=C13+B14
-	Subtraction	=C13-C14
*	Multiplication	=C13*C14
/	Division	=C13/C14
^	Exponents	=C13^C14

Fig. 1. *Arithmetic Operations*

Practice:

Open a new worksheet.

Enter the following data:

	A	B	C	D
1				
2	**Product Name**	**Price/Piece**	**Quantity**	**Total**
3				
4	Notebook, spiral	13.5	5	
5	Notebook, bound	15.25	5	
6	Pens, Black	8.80	12	
7	Pens, Blue	7.90	12	
8	Pens, Red	9.95	24	
9	Stapler, small	25.65	3	
10	Stapler, big	44.75	2	
11				
12	Grand Total			
13				

Fig. 2. *Sample Table*

You can **resize columns** if text overlaps in another cell. Position your mouse pointer in between **column headers**. Double click. It will **auto fit** the columns to the widest width in the entire column. Or, you can point your mouse in between two column headers (ex. A and B) then drag your mouse to your desired width.

Using arithmetic operations in **Fig. 1,** enter a simple formula for the **Grand total** of the **Price per pieces** of the product.

- Using simple formula, in cell B12, you can simply type '=B4+B5+B6+B7+B8+B9+B10'. This is the most logical solution.
- Press **Enter** in your keyboard when done. Notice that the result of the calculation is displayed in the cell B12 that you selected.
- The formula is displayed in formula bar.
- If equal sign '=' is not entered at the beginning, the formula you entered will display a regular text.

Cell Reference

Why use cell reference or cell range instead of the actual data (ex. 13.5 or 15.25) in the cell to do the computation? Cell reference makes calculation *automatic*. We say automatic simply because if you change a digit or data in a cell included in the formula, the answer automatically change.

Practice:

We are going to change some data in cells included in the formula and notice how the Excel recalculates the formulas we entered.

- Change the amount in cell B4 from '13.5' to '18.25'.
- See how the total of calculations referencing cell 'B12' automatically changed.

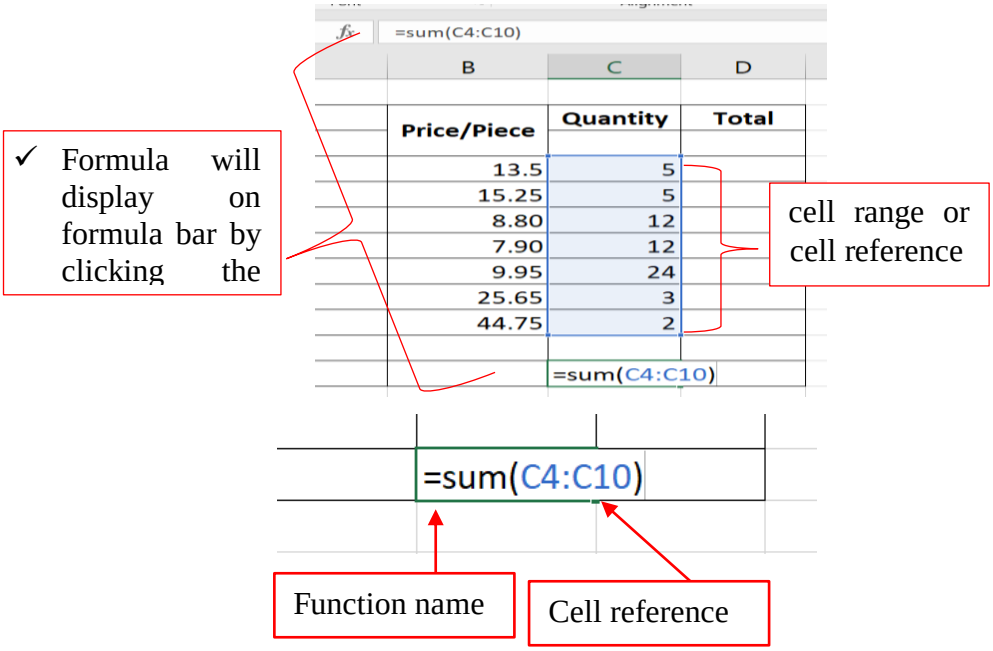
Automatic Calculations automatically recalculates the result of any formulas as cell entries changes.

Create Formula that contains Function

Function is different from formula because after entering the equal sign '=' you will then enter the cell address but not the operators. The function performs calculations by using specific values, which is called *arguments* in a particular order called *syntax*. *Syntax* must be followed strictly for the function to work correctly.

How to use function:

- Start with equal sign '='
- After = sign state the **function name** (example: Sum)
- Enclosed the **argument** inside a parenthesis. **Argument** is the cell range or cell reference.
- Use a comma to separate the function's individual arguments.



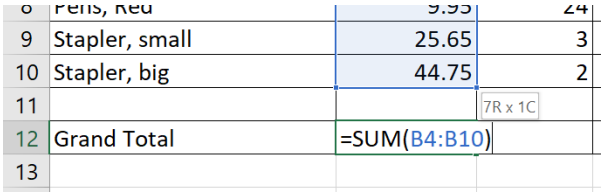
Practice:

Using the same spreadsheet above, *Fig. 2 Sample Table*, calculate the Grand Total of Quantity using the *SUM* function.

Editing Formula

Sometimes we entered an incorrect cell address in our formula so we will need to correct it. To edit a formula, do the following:

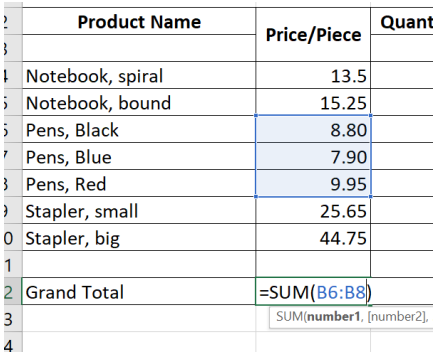
a. Select the cell that contains the formula you would like to edit. For example, select B12, then double click it.



b. You can also edit the formula in the *formula bar*.

c. A colored border will appear to the referenced cells.

d. In the above table you can see that I have changed the referenced cell from B6 to B8. Instead of adding them all, I just get the sum of all the pens. Notice a blue border to the amount of cells included in the formula.



e. When finished, click on **Enter** in your keyboard.

COPYING FORMULA using CLIPBOARD

You can always copy or move a formula in a cell, but it is important to note what happens to cell references when you do so.

- ✓ When you move a formula, the cell references within the formula *do not change* whatever type of cell references (absolute or relative) that you use.
- ✓ When you copy a formula, the cell references *may change* based on the type of cell reference that you use.

Move a formula

a. Select the cell that contains the formula that you want to move.

b. In the **Home** tab, in the **clipboard** group, click **Cut.**

You can also move formulas by dragging the border of the selected cell to the upper-left cell of the paste area. Any existing data is replaced.

c. Click on the cell where you would like put the formula.

d. Do one of the following:

- To paste the formula and any formatting, on the **Home** tab, in the **Clipboard** group, click **Paste**.
- To paste the formula only, on the **Home** tab, in the **Clipboard** group, click the small arrow below the **Paste**, click **Paste Special**, and then click **Formulas.**

Copy a formula

a. Select the cell that contains the formula that you want to copy.

b. On the **Home** tab, in the **Clipboard** group, click **Copy**.

c. Do one of the following:

- To paste the formula and any formatting, on the **Home** tab, in the **Clipboard** group, click **Paste**.
- To paste the formula only, on the **Home** tab, in the **Clipboard** group, click the small arrow below **Paste**, click **Paste Special**, and then click **Formulas**.

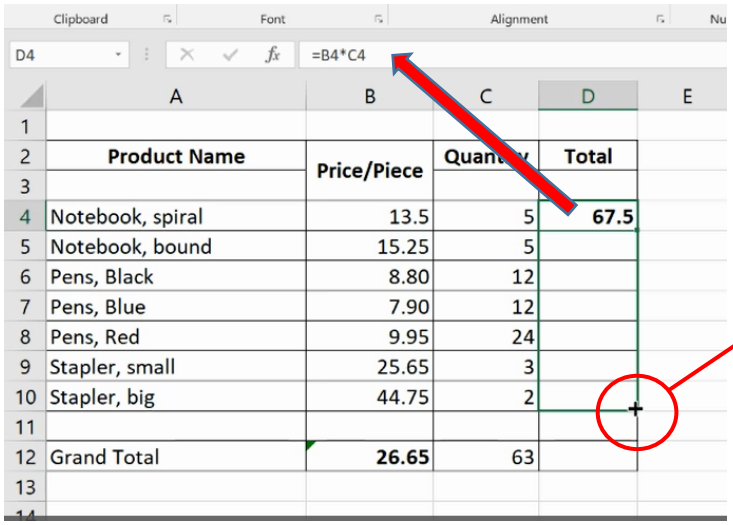
  *You can paste only the formula results. On the **Home** tab, in the **clipboard** group, click **Paste**, click **Paste Special**, and then click **Values**.*

Using Fill Handle

You can also copy formula using Fill Handle.

a. Using the same sample table in Fig. 2, enter the formula at the top cell.

- Go to D4, enter the formula '=B4*C4'. Hit Enter.
- Select the cell with the formula, and hover the mouse cursor over a small square at the lower right-hand corner of the cell, which is called the **Fill handle**. As you do this, the cursor will change to a thick black cross.



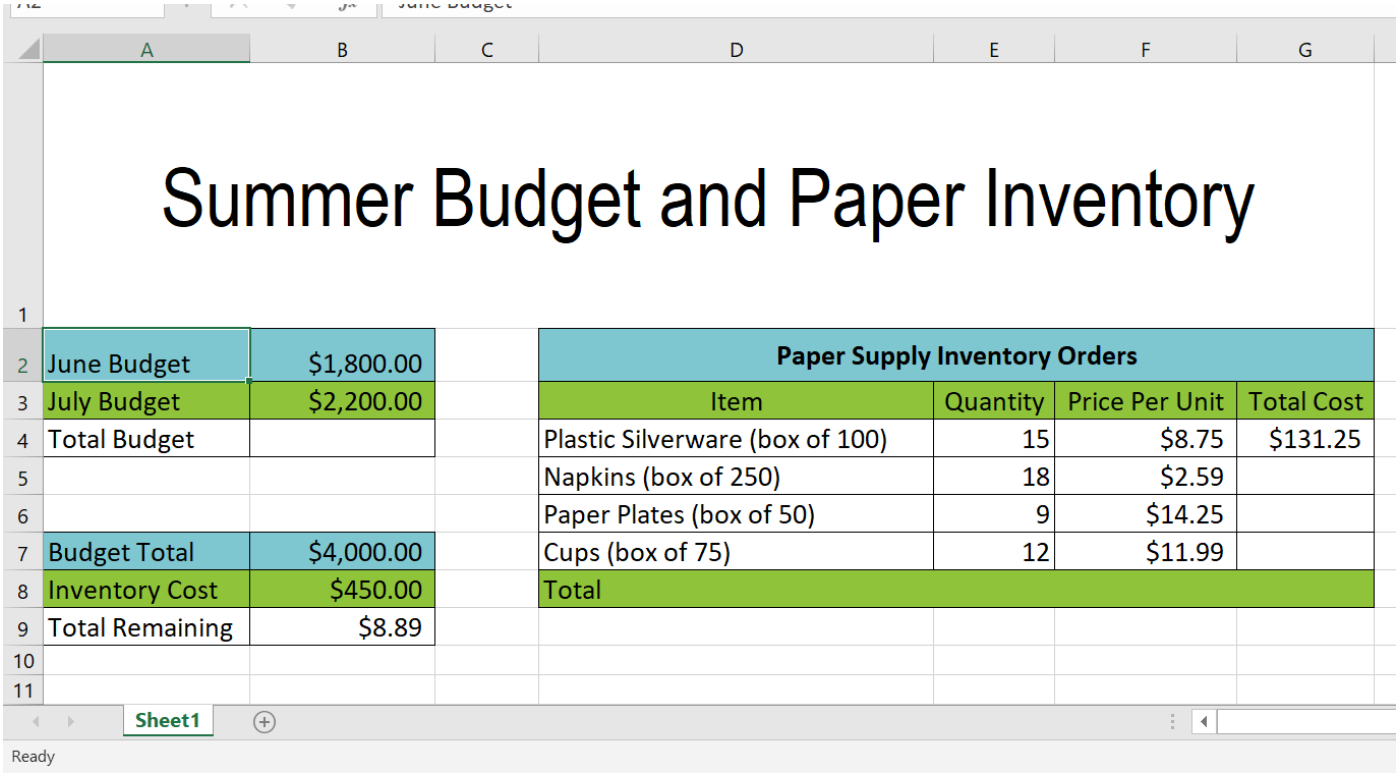
Hold and drag the plus sign down to copy the formula

You can also drag it to the adjacent cell to the left or right or

ACTIVITIES

ACTIVITY 1

Directions:



Summer Budget and Paper Inventory

June Budget	$1,800.00
July Budget	$2,200.00
Total Budget	
Budget Total	$4,000.00
Inventory Cost	$450.00
Total Remaining	$8.89

Paper Supply Inventory Orders			
Item	Quantity	Price Per Unit	Total Cost
Plastic Silverware (box of 100)	15	$8.75	$131.25
Napkins (box of 250)	18	$2.59	
Paper Plates (box of 50)	9	$14.25	
Cups (box of 75)	12	$11.99	
Total			

Sheet1

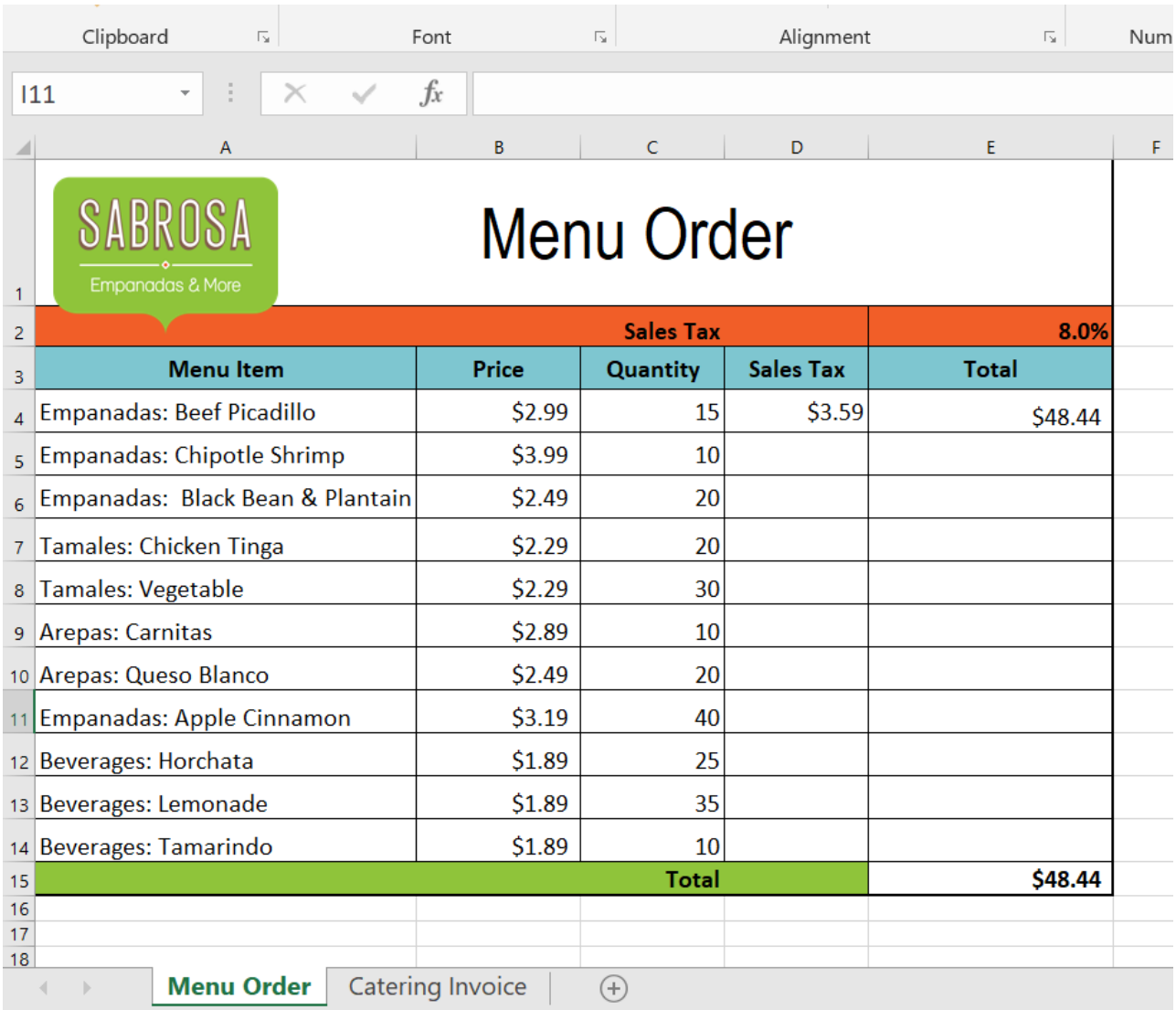
Ready

1. Open a blank worksheet.
2. Copy the data on the table
3. Create a simple addition formula using cell references. Create the formula in cell B4 to calculate the total budget.
4. Try to modify the value of a cell referenced in a formula. Change the value of cell B2 to $2,000. Notice the formula in cell B4 recalculates the total.
5. Go to cell G5. Create a formula that multiplies the cost of napkins by the quantity needed to calculate the total cost.
6. Edit a formula using the formula bar. Go to cell B9, the formula should be '=B7/B8'. Edit this formula in cell B9 from division (/) to minus sign (-).
7. Save your work. Filename: Activity 1 week7 Surname, Given name.

ACTIVITY 2

Directions:

1. Open blank workbook and copy the table below in your worksheet.



Clipboard | Font | Alignment | Num

I11

SABROSA
Empanadas & More

Menu Order

			Sales Tax		8.0%
	Menu Item	Price	Quantity	Sales Tax	Total
	Empanadas: Beef Picadillo	$2.99	15	$3.59	$48.44
	Empanadas: Chipotle Shrimp	$3.99	10		
	Empanadas: Black Bean & Plantain	$2.49	20		
	Tamales: Chicken Tinga	$2.29	20		
	Tamales: Vegetable	$2.29	30		
	Arepas: Carnitas	$2.89	10		
	Arepas: Queso Blanco	$2.49	20		
	Empanadas: Apple Cinnamon	$3.19	40		
	Beverages: Horchata	$1.89	25		
	Beverages: Lemonade	$1.89	35		
	Beverages: Tamarindo	$1.89	10		
				Total	$48.44

Menu Order | Catering Invoice

2. Compute Total Price
3. Compute Sales tax
4. Compute for the Grand total
5. Save your work with filename: Activity 2 week 7 surname, given name.