

Background and Overview:

What is Microsoft ® Excel?

Microsoft ® Excel is a commercial spreadsheet application that is produced and distributed by Microsoft for Microsoft ® Windows and Mac OS operating systems. It features the ability to perform basic calculations, use graphing tools, create pivot tables and create macros, among other useful features.

Microsoft ® Excel uses a collection of cells arranged into rows and columns to organize and manipulate data. They can also display data as charts, histograms, and line graphs.

Activities:

Pre-Lab Activities:

Open Microsoft ® Excel:

- Type “excel” in the search bar

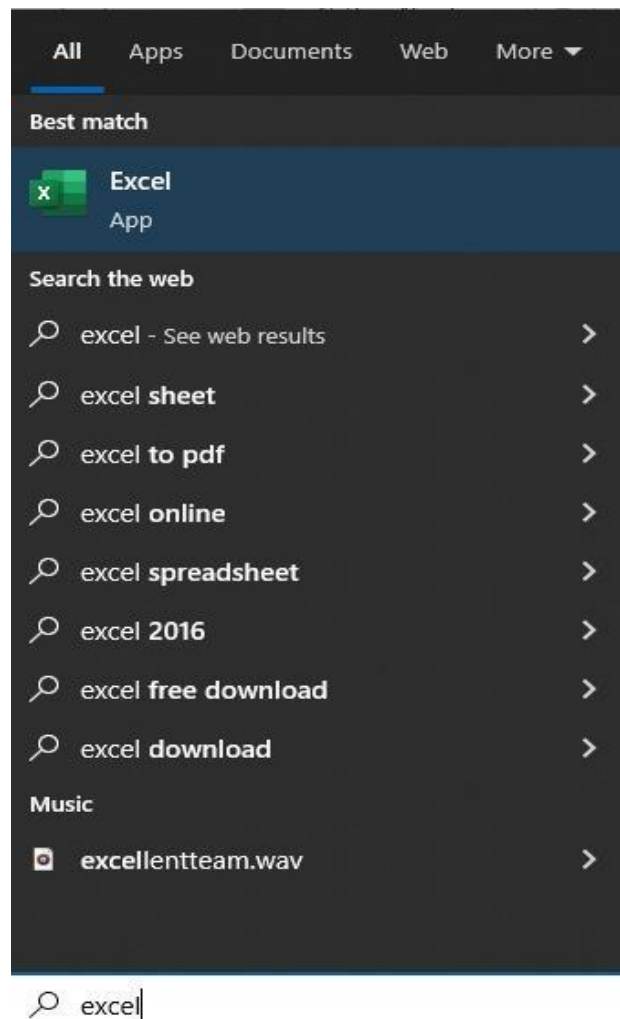


Fig. 1 (Searching Microsoft ® Excel)

- Select “Excel” application
- Select a blank workbook

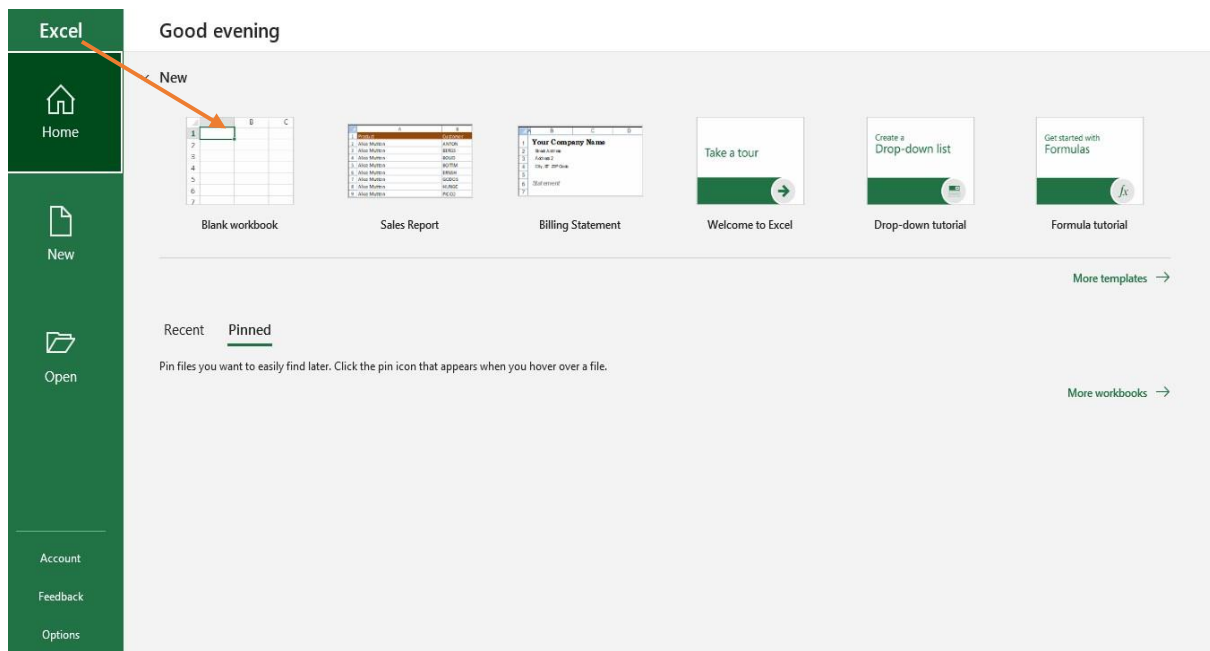


Fig. 2 (Open Blank Worksheet)

Understanding Workbooks:

A worksheet (or page) in a workbook contains **16,384 columns** that are labeled using letters of the alphabet. The first column in a worksheet is labeled column **A**, while the last is labeled **XFD**.

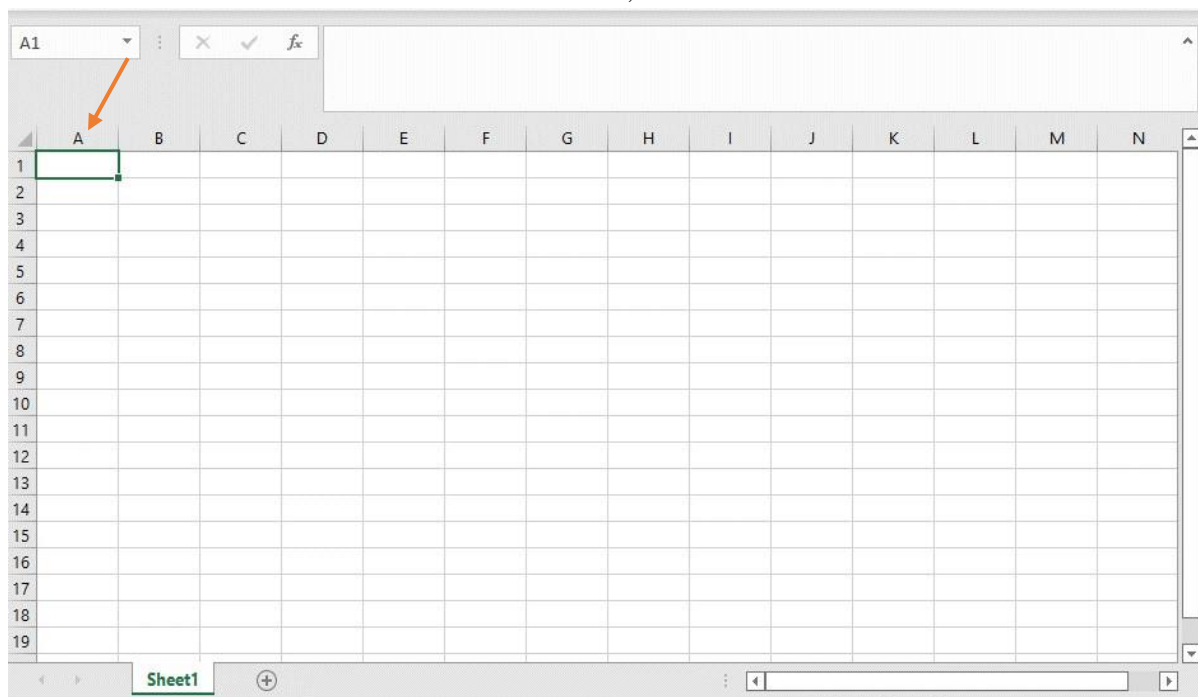


Fig. 3 (Blank Worksheet)

A worksheet (or page) in a workbook contains **1,048,576 rows** that are labeled using numbers from **1** to **1,048,576**.

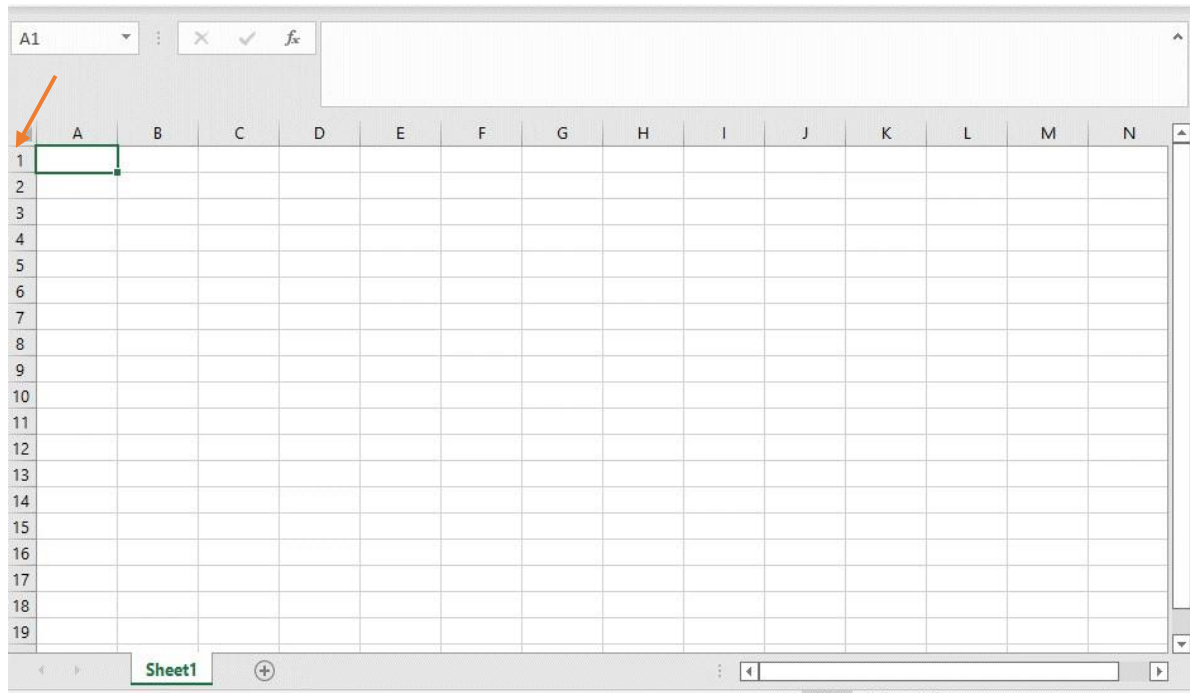


Fig. 4 (Blank Worksheet)

Where a column and row intersect, we get what is known as a cell. You enter your data into these cells. Each cell in a worksheet can hold up to **32,767 characters**. Cells are referred to by their column and row labels. For example, in the figure below the cell, we are pointing to is **B10**, this reference is known as the **cell address** and is most important as it is frequently used in commands and formulas.

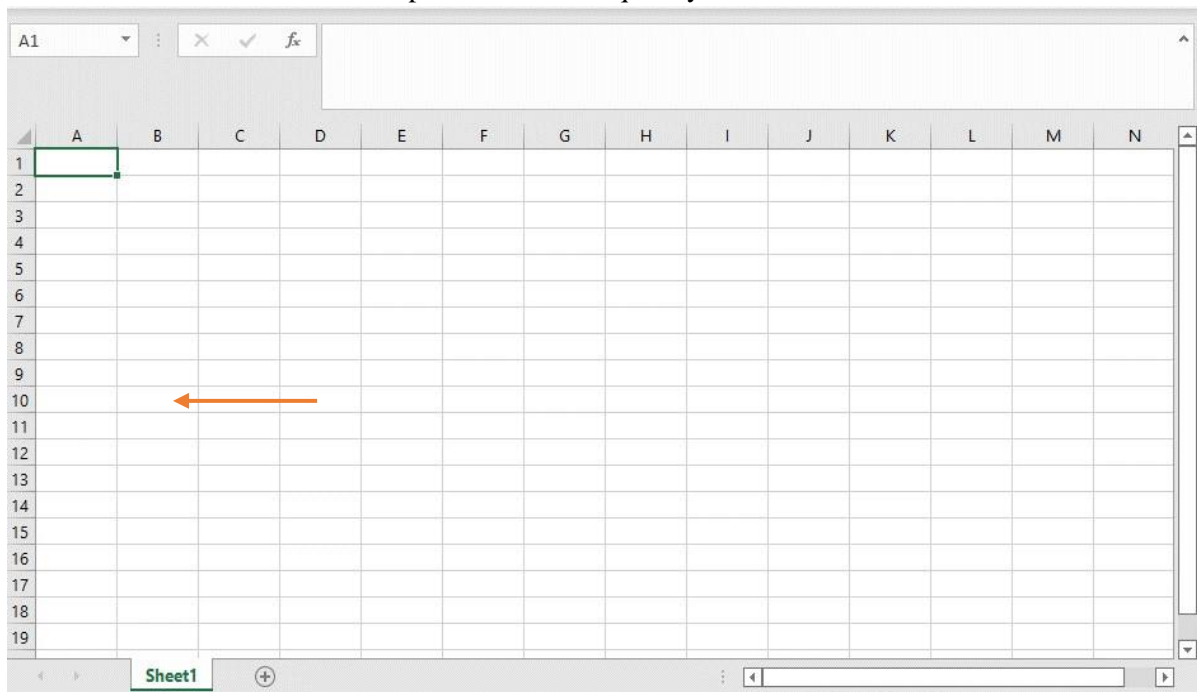


Fig. 5 (Blank Worksheet)

Insert Worksheet button will insert another worksheet into the current workbook.

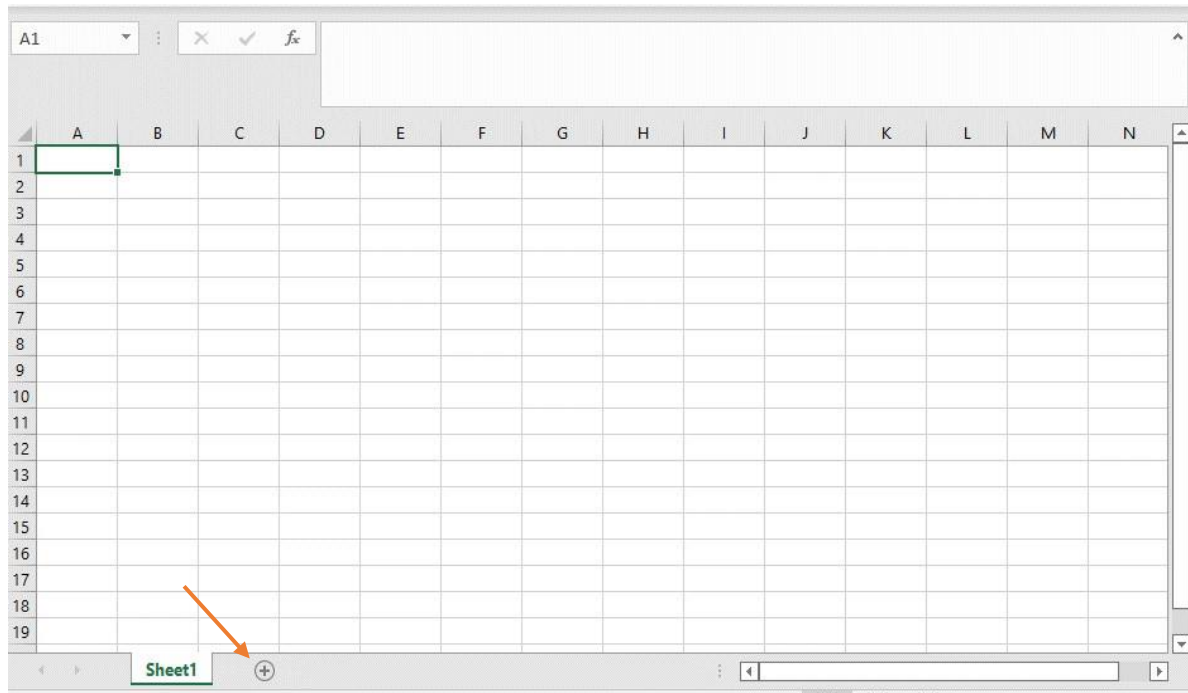


Fig. 6 (Blank Worksheet)

Navigating in a File:

Keys	Movement
Arrow Keys	Move one cell to the right, left, up, or down
Tab	Move one cell to the right
Ctrl + Home	To the beginning of the file
Shift + Tab	Move one cell to the left
Ctrl + End	To end of typed information
Home	Beginning of a line
End	End of a line
F5	To a specific page
Page Down	Down one screen
Page Up	Up to one screen

Merge and Center Cells:

- Click cell **A1** and take note of the appearance of the **buttons** on the **Formula Bar**. Two of them dimmed, indicating they are unavailable

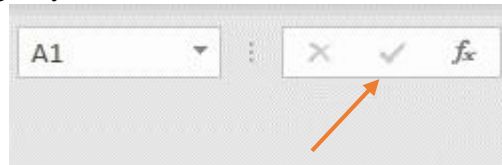


Fig. 7 (Formula bar)

- Note also the **cell address** in the **Name Box**

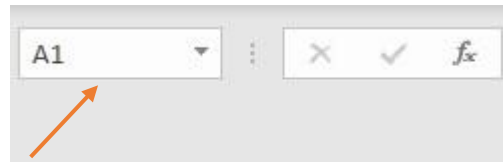


Fig. 8 (Name box)

- Note the **dark green border** around cell **A1**. This means the cell is selected and ready to accept data



Fig. 9 (Cell)

- Type **Monthly Budget**
- Note how all three buttons on the Formula Bar are now available



Fig. 10 (Formula bar)

Cancel	Returns the cell content to its previous state
Enter	Commits the changes that were made to the cell. There are many ways to commit changes to a cell, but this button is guaranteed to work all the time, no matter what situation you are in.
Insert Function	Inserts a function into the cell

- Select cells **A1** to **C1** by clicking inside the first cell, making sure your mouse pointer is a **white box cross (selection tool)** and holding the left mouse button down, and dragging across to the last cell of the selection area

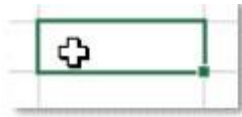


Fig. 11 (Selection tool)

- On the **Home tab**, in the **Alignment group**, click the **Merge & Center** button

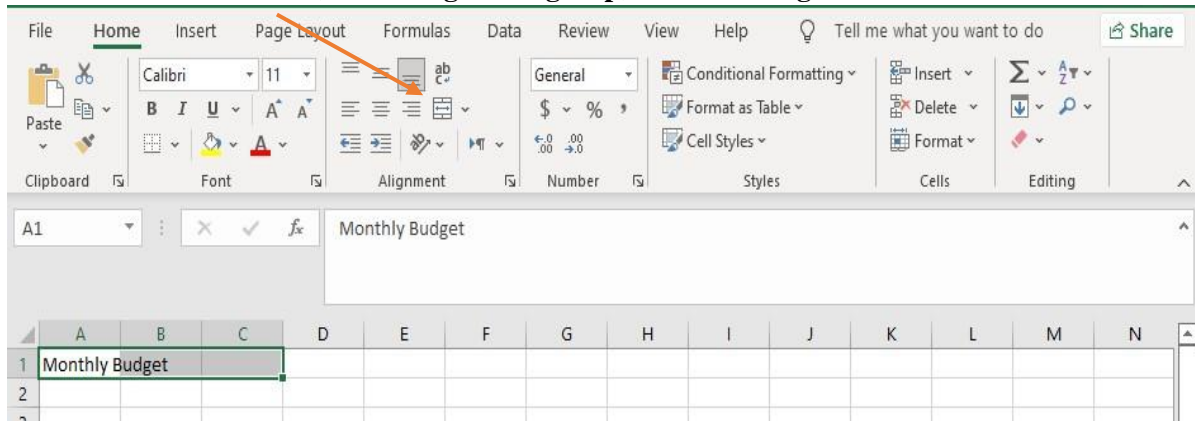


Fig. 12 (Merge Cells)

Enter Data:

- Click in cell **A2**. Type **Item**, and tap the Tab key to move to cell **B2**
- In cell **B2**, type **Amount** and tap the Tab key to move to cell **C2**
- In cell **C2**, type **Comments**
- Move to a different cell to commit the content in C2 or commit with the checkmark

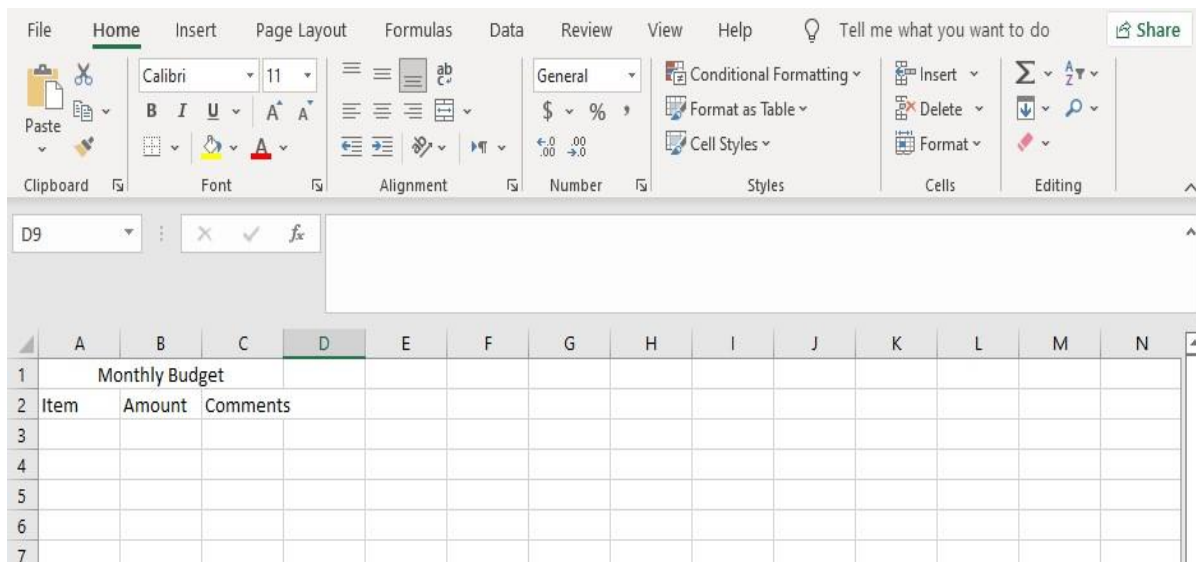


Fig. 13 (Merge Cells)

Format Cells:

- Select the **A2 through C2** cell range by clicking cell A2, making sure the cursor is the **selection tool (white box cross)**, and dragging across to cell C2. The selected cells should be highlighted, although the first cell will not be so
- On the **Home tab** in the **Font group**, click the **Bold button** or Press **CTRL+B**

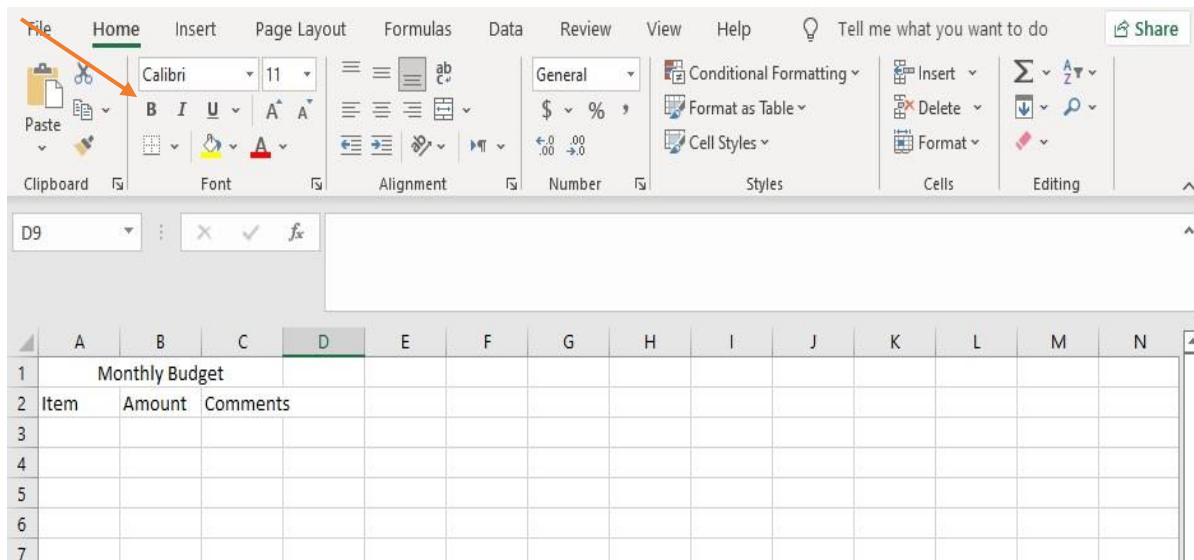


Fig. 14 (Bold text)

- Change the **font size to 12**
- Find the **Fill Color button** in the **Font group** and click the list arrow. Select a color from the color choices

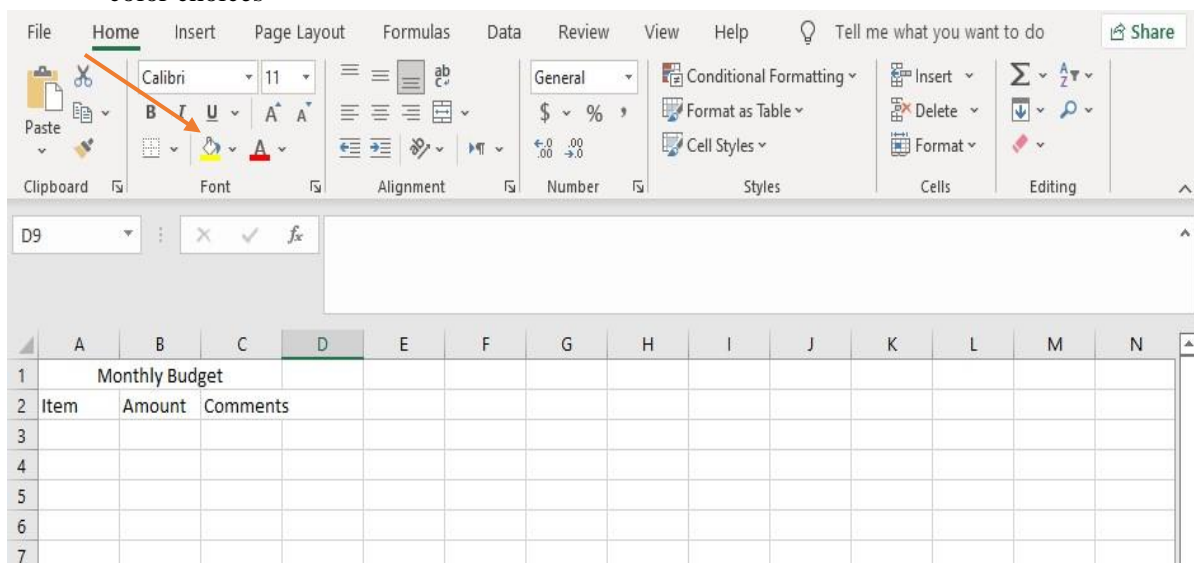


Fig. 15 (Fill Color button)

- Click in a clear cell to view the changes to this range of cells

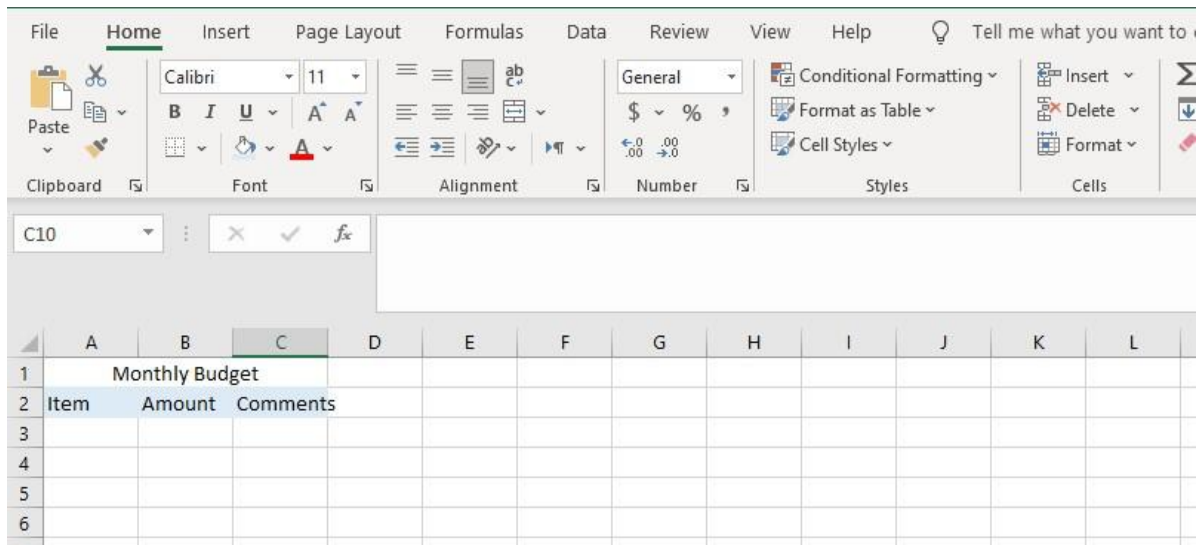


Fig. 16 (Fill Color)

Resize Column:

Note how the word Comments doesn't fit in the cell. To fix that, we need to widen the column **Using**

Ribbon

- Click on the **C** at the top of the column to select the column. This is called the **column label**



Fig. 17 (Column Tag)

- On the **Home tab** in the **Cells group**, click the **Format button**. Under **Cell Size**, choose **AutoFit Column Width**

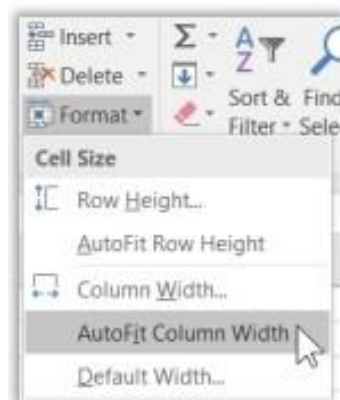


Fig. 18 (Format Button)

- Click in a clear cell to deselect the column

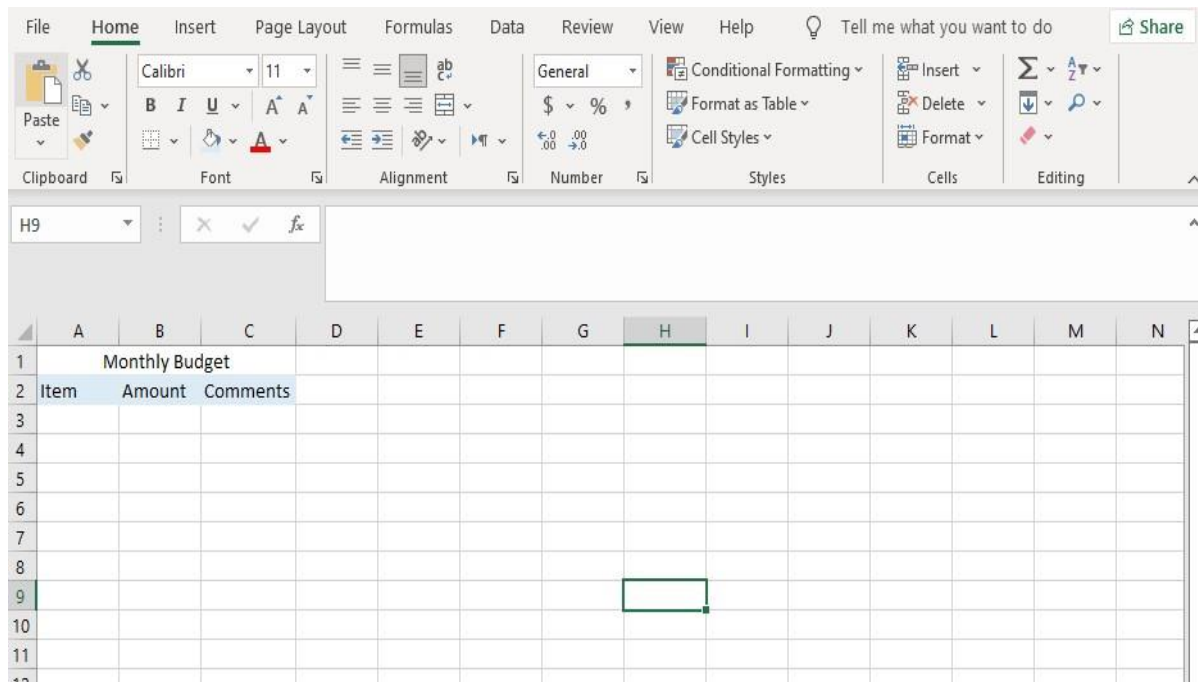


Fig. 19 (Adjust Column width)

Double Click Method

- Point the cursor to the dividing line between the column **C label** and the column **D label**
- The pointer turns into an arrow pointing left and right



Fig. 20 (Adjust Column Width)

- Keeping the cursor in that location, **double-click** to resize the column

Apply Currency Style Formatting:

- Select column **B** by clicking on the letter B at the top of the column
- On the **Home** tab in the **Number** group, click the Accounting **Number Format** button

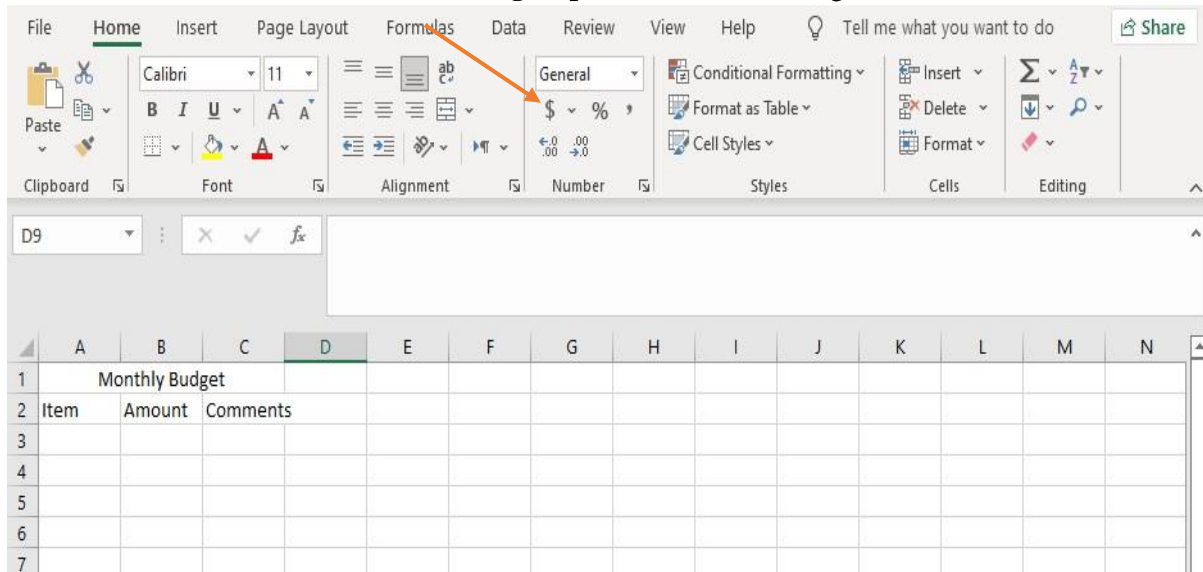


Fig. 21 (Currency Formatting)

- Numbers now have dollar signs and two decimal places

Amount
\$ 800.00
\$ 40.00
\$ 50.00
\$ 150.00
\$ 25.00
\$ 75.00
\$ 100.00
\$ 100.00

Fig. 22 (Currency Formatting)

Simple Formula:

- Always start your formula with an equal = sign. Click into **B11** and type an “=” sign
- Now, click into cell **B3**. The cell name (B3) appears in **B11** as if it was typed in and also a color border is now around cell B3

Amount
\$ 800.00
\$ 40.00
\$ 50.00
\$ 150.00
\$ 25.00
\$ 75.00
\$ 100.00
\$ 100.00
=B3

Fig. 23 (Applying formula)

- Next, type a “+” **sign** and then click in cell **B4**. Continue to type the + **signs** and click into the cells, which will add the value that is in that cell, until you click into the last cell, B10. Do not type the + sign after clicking in B10

B10				
	A	B	C	D
1		Monthly Budget		
2	Item	Amount	Comments	
3	Rent	\$ 800.00	May 1st this goes to \$825	
4	Utilities	\$ 40.00	Look into new windows	
5	Transportation	\$ 50.00		
6	Food	\$ 150.00		
7	Medical	\$ 25.00		
8	Clothing	\$ 75.00		
9	Leisure	\$ 100.00		
10	Miscellaneous	\$ 100.00		
11	TOTAL	=B3+B4+B5+B6+B7+B8+B9+B10		
12				

Fig. 24 (Applying formula)

- Click the **checkmark** on the formula bar to see the result

Monthly Budget
Amount
\$ 800.00
\$ 40.00
\$ 50.00
\$ 150.00
\$ 25.00
\$ 75.00
\$ 100.00
\$ 100.00
\$ 1,340.00

Fig. 25 (Applying Formula)

Use a Function:

- Type an “=” **sign** into cell **B11**
- Type **SUM**. As you type, note that a dropdown list appears with suggestions for which function you might like to use
 - Clicking once will display a description of the function
 - Double-clicking will add the function to the formula in the cell

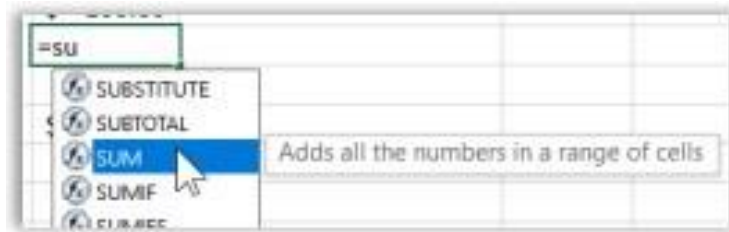


Fig. 26 (Using function)

- Double-click the **SUM** entry
 - ScreenTip shows the function's **syntax**. This tells you what kind of values the function expects to receive
- We are going to pass a range of cells into the function
 - Click into the first cell in the range, which is **B3**
 - Type a **colon**
 - Click into the last cell in the range, which is **B10**
 - Commit the formula by clicking the **checkmark** in the formula bar **AutoSum**:
- Click in **B11**
- On the **Home** tab in the **Editing** group, click the **AutoSum** button

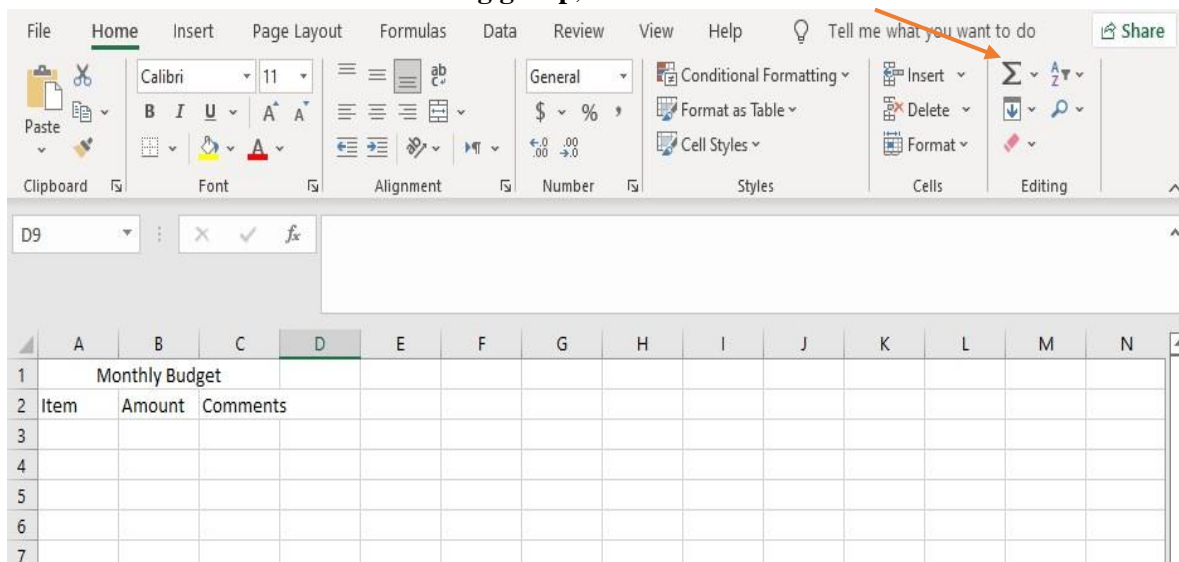


Fig. 27 (AutoSum function)

- A formula appears in **B11**
- If the formula is correct, then click the checkmark

Adding Columns:

- Add a column between column B and column C

- Select the column to the right of where you want the new column to insert by pointing to the column label (A, B, C, e.g.) and clicking on it. In this case, **click on C** □ On the **Home** tab in the **Cells** group, click on the **Insert** button

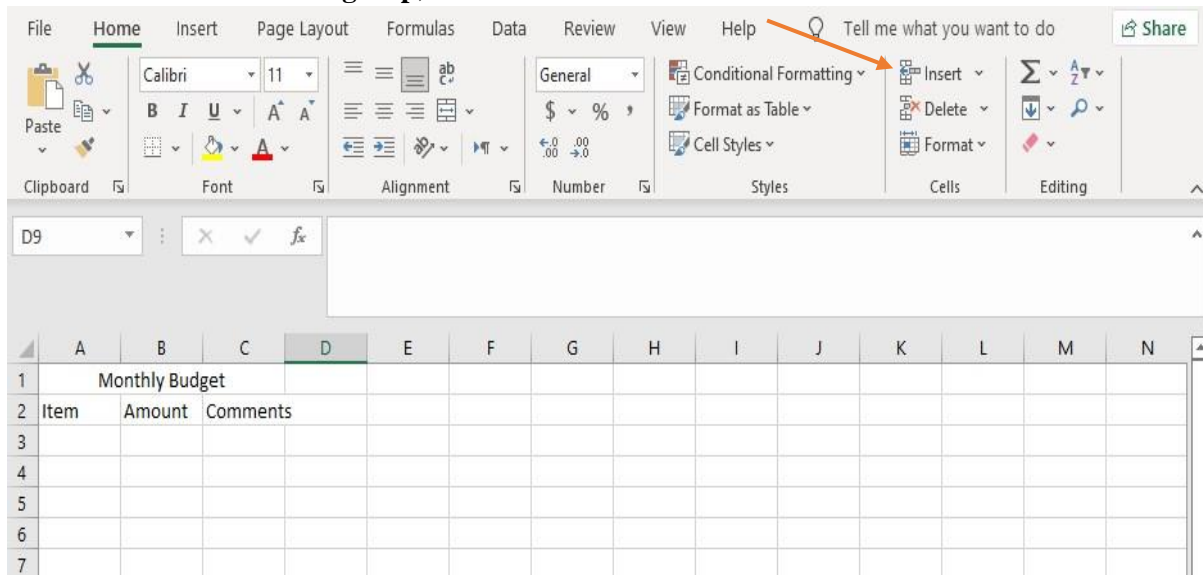


Fig. 28 (Adding columns)

New Column will be inserted.

B	C	D
Monthly Budget		
Amount		Comments
\$ 800.00		
\$ 40.00		
\$ 50.00		
\$ 150.00		
\$ 25.00		
\$ 75.00		
\$ 100.00		
\$ 100.00		
\$ 1,340.00		

Fig. 29 (Adding columns)

Formulas View:

Hold down the Ctrl key, and tap the “~” (tilde) key. The tilde key is directly below the Esc key

	A	B	C	D	E
1	Monthly Budget				
2	Item	Budget	Actual	Difference	Comments
3	Rent	800	800	=B3-C3	May 1st this goes to \$825
4	Utilities	40	50	=B4-C4	Look into new windows
5	Transportation	50	60	=B5-C5	
6	Food	150	195	=B6-C6	
7	Medical	25	25	=B7-C7	
8	Clothing	75	50	=B8-C8	
9	Leisure	200	130	=B9-C9	
10	Miscellaneous	100	20	=B10-C10	
11	TOTAL	=SUM(B3:B10)	=SUM(C3:C10)	=SUM(D3:D10)	
12					
13	INCOME	2500			
14	EXPENCES	=B11			
15	VACATION CLUB				
16	SAVINGS				

Fig. 30 (Formula View)

Adding Rows:

- Add a column between row B and row C
 - Select the column above which you want the new row to insert by pointing to the row label
 - On the **Home tab** in the **Cells group**, click on the **Insert button**

2	Amount
3	\$ 800.00
4	\$ 40.00
5	\$ 50.00
6	\$ 150.00
7	\$ 25.00
8	
9	75.00
10	\$ 100.00
11	\$ 100.00

Fig. 31 (Adding rows)

Sorting Data:

- Select cells **A3** through **A9**

1	Monthly Budget	
2	Item	Amount
3	Rent	\$ 800.00
4	Utilities	\$ 40.00
5	Transportation	\$ 50.00
6	Food	\$ 150.00
7	Medical	\$ 25.00
8	Clothing	\$ 75.00
9	Leisure	\$ 100.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		

Fig. 32 (Sorting data)

- On the **Home tab** look in the **Editing group** and click **Sort & Filter**. Choose the **A to Z sort option**

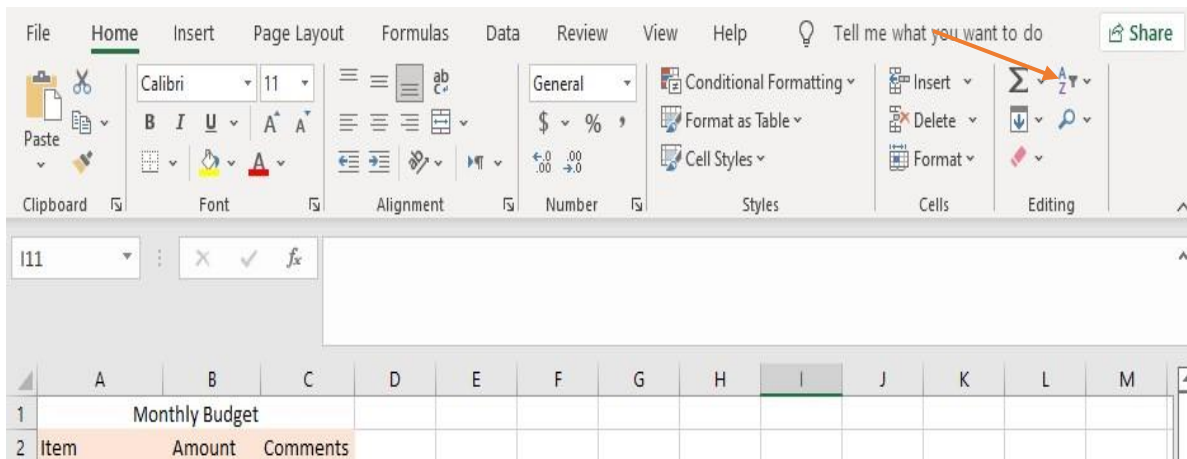


Fig. 33 (Sort Button)

- A Sort Warning dialogue box appears



Fig. 34 (Sort Warning Dialog)

- Choose **Continue with the current selection** and click the **Sort** button. This results in only the item names being sorted leaving the rest of the data in place. So Undo it

	A	B
1	Monthly Budget	
2	Item	Amount
3	Clothing	\$ 800.00
4	Food	\$ 40.00
5	Leisure	\$ 50.00
6	Medical	\$ 150.00
7	Rent	\$ 25.00
8	Transportation	\$ 75.00
9	Utilities	\$ 100.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		

Fig. 35 (Sorting data)

- Now choose to **Expand the selection**. The Excel correctly identified that column B (Amount) should be included (the amounts are correctly aligned with the items). However, it also extended the sort vertically, including row 10 (Miscellaneous) and row 11 (Total) in the sort. This is not what we wanted

	A	B
1	Monthly Budget	
2	Item	Amount
3	Clothing	\$ 75.00
4	Food	\$ 150.00
5	Leisure	\$ 100.00
6	Medical	\$ 25.00
7	Miscellaneous	\$ 100.00
8	Rent	\$ 800.00
9	TOTAL	\$ 1,250.00
10	Transportation	\$ 50.00
11	Utilities	\$ 40.00
12		
13		

Fig. 36 (Sorting data)

So, it's better to select specific cells you want to include in the sort.

- Select cells **A3** through **B9**

	A	B
1	Monthly Budget	
2	Item	Amount
3	Rent	\$ 800.00
4	Utilities	\$ 40.00
5	Transportation	\$ 50.00
6	Food	\$ 150.00
7	Medical	\$ 25.00
8	Clothing	\$ 75.00
9	Leisure	\$ 100.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		

Fig. 37 (Sorting data)

- Click **Sort and Filter** and then **Sort A to Z** (no dialog box appears because we are being more specific about what we want to sort)

	A	B
1	Monthly Budget	
2	Item	Amount
3	Clothing	\$ 75.00
4	Food	\$ 150.00
5	Leisure	\$ 100.00
6	Medical	\$ 25.00
7	Rent	\$ 800.00
8	Transportation	\$ 50.00
9	Utilities	\$ 40.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		

Fig. 38 (Sorting data)

Custom Sort:

- Select cells **A3 to B9**
- On the **Home** tab go to the **Editing group** and click **Sort & Filter**. Choose **Custom Sort**

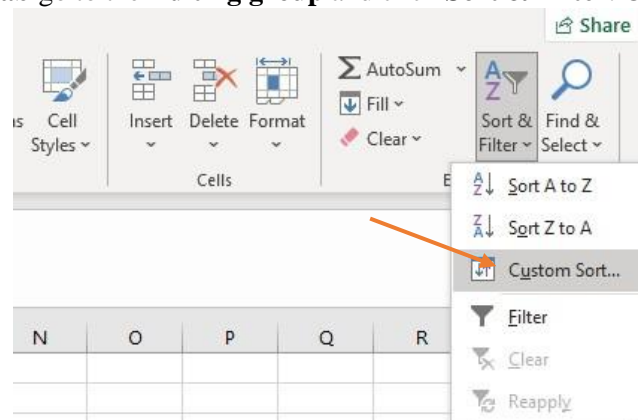


Fig. 39 (Custom sort)

- In the Sort dialogue box, in the Column **Sort by** field, use the list arrow to select our column labeled **Amount**. The **Sort On** field should be **Cell Values** and the **Order** field should be **Smallest to Largest**. Click **OK**

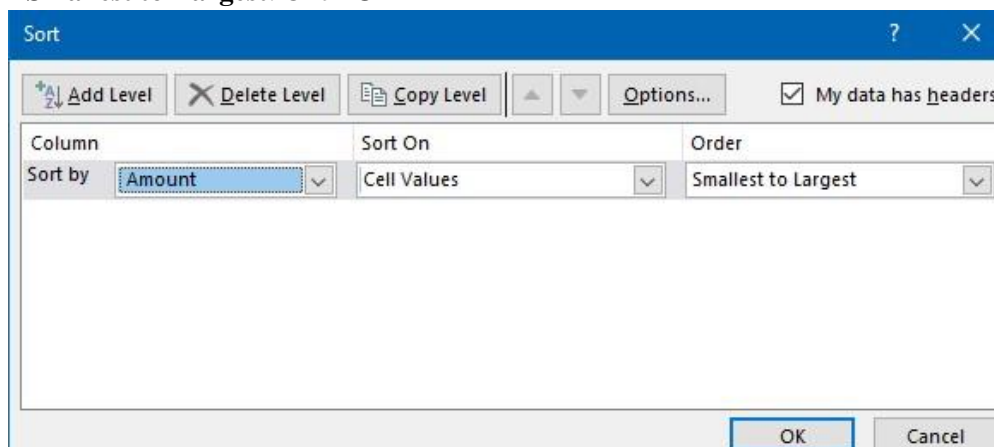
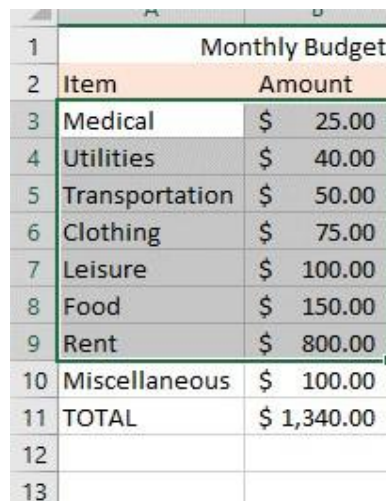


Fig. 40 (Custom sort dialog)

Data will be sorted by amount.



1	Monthly Budget	
2	Item	Amount
3	Medical	\$ 25.00
4	Utilities	\$ 40.00
5	Transportation	\$ 50.00
6	Clothing	\$ 75.00
7	Leisure	\$ 100.00
8	Food	\$ 150.00
9	Rent	\$ 800.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		
13		

Fig. 41 (Custom sort)

Precedence of Operations:

Excel is not evaluated left to right. Certain operators are evaluated before others, which changes the formula's result.

Precedence (High to Low)	Description
()	Parenthesis
^	Exponents
/, *	Division, Multiplication
+, -	Addition, Subtraction

Conditional Formatting:

- Select the Column **B**
- On the **Home** tab, in the **Styles** group, click **Conditional Formatting**. Then, click on **Highlight Cell Rules** and then **Less Than**

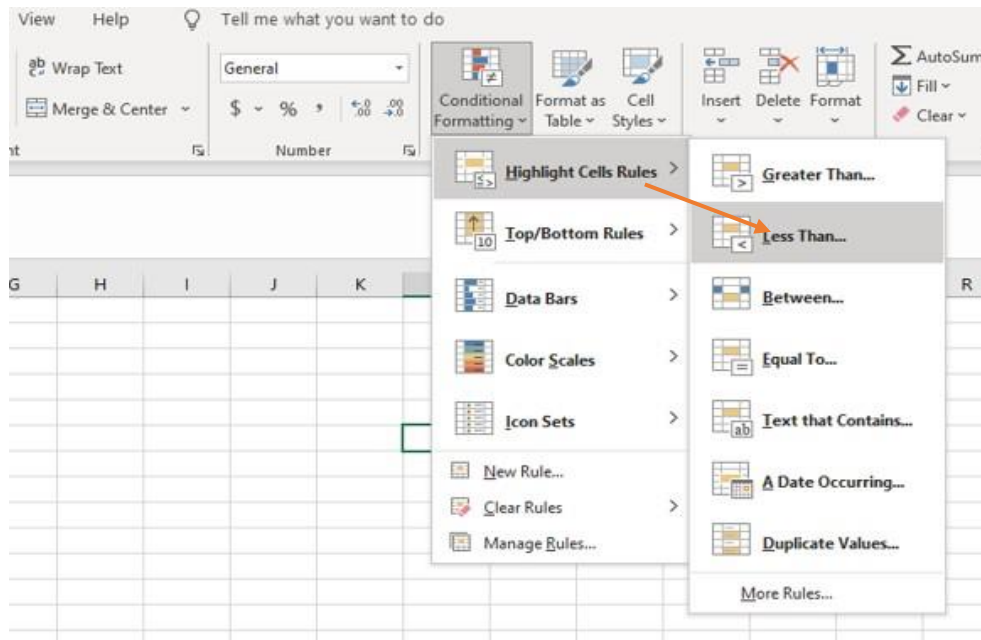


Fig. 42 (Conditional formatting)

- In the Less Than dialogue box enter **50** in the text box on the left
- Select “**Light Red Fill with Dark Red Text**” in the dropdown list on the right



Fig. 43 (Less Than condition dialog)

- Click **OK** in the Less Than dialogue box

	A	B
1	Monthly Budget	
2	Item	Amount
3	Medical	\$ 25.00
4	Utilities	\$ 40.00
5	Transportation	\$ 50.00
6	Clothing	\$ 75.00
7	Leisure	\$ 100.00
8	Food	\$ 150.00
9	Rent	\$ 800.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		

Fig. 44 (Conditional formatting) Similarly, follow the above steps for greater than and fill values **greater than 50** with “**green with dark green text**” and for a value **equal to 50** with “**yellow with the dark yellow text**”.

The result will be the following.

	A	B
1	Monthly Budget	
2	Item	Amount
3	Medical	\$ 25.00
4	Utilities	\$ 40.00
5	Transportation	\$ 50.00
6	Clothing	\$ 75.00
7	Leisure	\$ 100.00
8	Food	\$ 150.00
9	Rent	\$ 800.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		

Fig. 45 (Conditional formatting)

Line Break within a cell:

- Type the word **“Total Average”** into cell **H20**

Total Average

Fig. 46 (Line break)

- Instead of making column **H** wider to fit the heading, we can make the word “**Average**” go on a separate line by inserting a line break
- With cell **H20** selected click in the formula bar just after the letter **I**, so that the cursor is at the end of the word **Total**
- Press **Alt + Enter** on the keyboard

	Total	
	Average	

Fig. 47 (Line break)

Wrap Text:

- Undo the last step
- Select cell **H20** selected click **Wrap Text** in the **Alignment** group on the **Home** tab • The text will fit inside the cell

	A	B
1	Monthly Budget	
6	Clothing	\$ 75.00
7	Leisure	\$ 100.00
8	Food	\$ 150.00
9	Rent	\$ 800.00
10	Miscellaneous	\$ 100.00
11	TOTAL	\$ 1,340.00
12		
13		
14		

Fig. 51 (Freeze Row)

- To freeze multiple columns or rows, select the cell that is one column to the right of the column(s) you want to freeze, and one row below the row(s) you want to freeze
- Select **B2**
- Click the **View** tab on the ribbon and in the **Window** group, click on **Freeze Panes** •
Select **Freeze Panes**

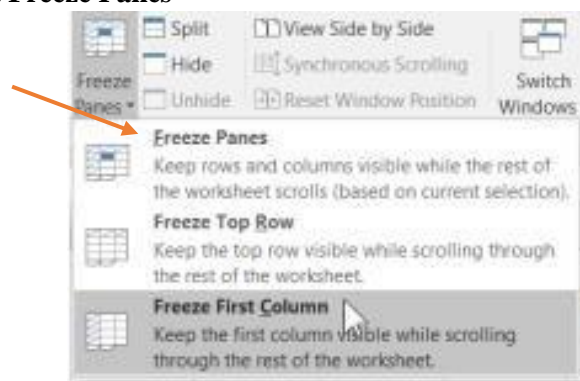


Fig. 52 (Freeze Pane)

- Row 1** and **Column A** will be freeze

	A	C
1	Monthly Budget	
2	Item	Comments
3	Medical	
4	Utilities	
5	Transportation	
6	Clothing	
7	Leisure	
8	Food	
9	Rent	
10	Miscellaneous	
11	TOTAL	

Fig. 53 (Freeze Pane)