

Office 2016– Excel Basics 04

Video/Class Project #16

Excel Basics 4: PivotTables & SUMIFS Function to Create Summary Reports (Intro Excel #4)

Goal in video # 4: Learn how to create a summary report for adding with one condition with:

1. **SUMIFS Function**
and
2. **The PivotTable feature**

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1) What Excel can do

i. **Make Calculations:** like calculate % Grade or Net Income or AVERAGE.

1. Like we did in video #1 & #2:

G	H	I
Test 3	Total	% Grade
100	360	
99	289	=H3/\$H\$2
98	311	86.39%

	A	B
1	2017 NI Projections	Jan
2	Revenue	\$6,500.0
3	Expenses	\$5,525.0
4	Net Income	=B2-B3

	A	B	C
1	Name	Quiz 1	Quiz 2
2	Max	20	
3	Sioux	15	
4	Abdi	19	
5	Chin	16	
6	Tyrone	20	
7	SheliaDawn	19	
8	Mo	19	
9	Gigi	11	
10	Average	=AVERAGE(B3:B9)	
11		AVERAGE(number1, number2, ...)	

ii. **Data Analysis:** Converting Raw Data into Useful Information, like taking table of data and creating a Regional Sales Report.

1. Like we will do in this video:

Lots of
Raw Data

12							
13	Date	Region	SalesRep	Sales		Region	Total
14	10/20/17	West	Gigi	\$620		Northwest	\$4,083
15	10/20/17	Northwest	Gigi	\$484		Southwest	\$3,117
16	10/20/17	West	Freddy	\$376		West	\$6,215
17	10/20/17	Northwest	Freddy	\$1,141			
18	10/20/17	Northwest	Chin	\$725			
19	10/20/17	West	Chin	\$222			
20	10/20/17	West	June	\$1,038			
21	10/21/17	Northwest	Chin	\$154		Region	Sum of Sales
22	10/21/17	Northwest	Gigi	\$205		Northwest	\$4,791
23	10/21/17	Southwest	Gigi	\$895		Southwest	\$3,117
24	10/21/17	West	Chin	\$1,254		West	\$6,215
25	10/22/17	Northwest	June	\$596		Grand Total	\$14,123
26	10/24/17	Southwest	Gigi	\$799			
27	10/24/17	Northwest	Gigi	\$651			
28	10/24/17	West	June	\$1,235			
29	10/24/17	Southwest	Chin	\$684			
30	10/24/17	Northwest	June	\$127			
31	10/24/17	West	June	\$269			
32	10/25/17	Southwest	Chin	\$739			
33	10/25/17	West	Gigi	\$1,201			
34	10/25/17	Northwest	June	\$546			
35	10/25/17	Northwest	Chin	\$162			

SUMIFS
Function

PivotTable

Regional Sales
Report is Useful
Information

2. You may hear the term “Data Analysis” or “Business Intelligence”. They are synonyms.

2) Define Proper Data Set

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Date	Region	SalesRep	Sales														
2	10/20/17	West	Gigi	\$620														
3	10/20/17	Northwest	Gigi	\$484														
4	10/20/17	West	Freddy	\$376														
5	10/20/17	Northwest	Freddy	\$1,141														
6	10/20/17	Northwest	Chin	\$725														
7	10/20/17	West	Chin	\$222														
8	10/20/17	West	June	\$1,038														
9	10/21/17	Northwest	Chin	\$154														
10	10/21/17	Northwest	Gigi	\$205														
11	10/21/17	Southwest	Gigi	\$895														
12	10/21/17	West	Chin	\$1,254														
13	10/22/17	Northwest	June	\$596														
14	10/24/17	Southwest	Gigi	\$799														
15	10/24/17	Northwest	Gigi	\$651														
16	10/24/17	West	June	\$1,235														
17	10/24/17	Southwest	Chin	\$684														
18	10/24/17	Northwest	June	\$127														
19	10/24/17	West	June	\$269														
20	10/25/17	Southwest	Chin	\$739														
21	10/25/17	West	Gigi	\$1,201														
22	10/25/17	Northwest	June	\$546														
23	10/25/17	Northwest	Chin	\$162														
24																		
25																		
26																		

"Column Headers" / "Field Names" in first row

Records in each row

Records in each row

Records in each row

Define:

Proper Data Set

- 1) "Column Headers" (also known as "Field Names") in first row
Field Names tell the user what data goes into the column: Date? Sales? And so on...
- 2) Each row after row with Field Names must have a transaction or record (for our example it is one sale in each row)
- 3) Must have empty cells or row/column headers all around data set.

empty cells or row/column headers
all around data set

3) SUMIFS function to create Regional Sale Report

- i. Type and Format words, like:

Region	Total

- ii. Type out the criteria / conditions for the SUMIFS function, like:

Region	Total
Northwest	
Southwest	
West	

- iii. Because we are copying the formula we must lock the ranges of cells using the F4 key (Absolute Cell Reference), but keep the cell for the criteria as a Relative Cell Reference, like:

13	Date	Region	SalesRep	Sales		Region	Total			
14	10/20/17	West	Gigi	\$620		Northwest	=SUMIFS(\$D\$14:\$D\$35,\$B\$14:\$B\$35,F14)			
15	10/20/17	Northwest	Gigi	\$484		Southwest				
16	10/20/17	West	Freddy	\$376		West				
17	10/20/17	Northwest	Freddy	\$1,141						
18	10/20/17	Northwest	Chin	\$725						
19	10/20/17	West	Chin	\$222						
20	10/20/17	West	June	\$1,038						
21	10/21/17	Northwest	Chin	\$154						
22	10/21/17	Northwest	Gigi	\$205						
23	10/21/17	Southwest	Gigi	\$895						
24	10/21/17	West	Chin	\$1,254						
25	10/22/17	Northwest	June	\$596						
26	10/24/17	Southwest	Gigi	\$799						
27	10/24/17	Northwest	Gigi	\$651						
28	10/24/17	West	June	\$1,235						
29	10/24/17	Southwest	Chin	\$684						
30	10/24/17	Northwest	June	\$127						
31	10/24/17	West	June	\$269						
32	10/25/17	Southwest	Chin	\$739						
33	10/25/17	West	Gigi	\$1,201						
34	10/25/17	Northwest	June	\$546						
35	10/25/17	Northwest	Chin	\$162						

- iv. Then you copy the formula down the column to get final Reginal Sales Report, like:

Region	Total
Northwest	\$4,791
Southwest	\$3,117
West	\$6,215

- v. Using SUMIFS requires that you type out each criteria and create a formula with Relative and Absolute Cell References.

4) Pivot Table to create Regional Sale Report

- i. The Proper Data Set we are using has Column Headers (Field Names) for “Date”, “Region”, “SalesRep”, and “Sales” and looks like:

13	Date	Region	SalesRep	Sales
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484
16	10/20/17	West	Freddy	\$376
17	10/20/17	Northwest	Freddy	\$1,141
18	10/20/17	Northwest	Chin	\$725
19	10/20/17	West	Chin	\$222
20	10/20/17	West	June	\$1,038
21	10/21/17	Northwest	Chin	\$154
22	10/21/17	Northwest	Gigi	\$205
23	10/21/17	Southwest	Gigi	\$895
24	10/21/17	West	Chin	\$1,254
25	10/22/17	Northwest	June	\$596
26	10/24/17	Southwest	Gigi	\$799
27	10/24/17	Northwest	Gigi	\$651
28	10/24/17	West	June	\$1,235
29	10/24/17	Southwest	Chin	\$684
30	10/24/17	Northwest	June	\$127
31	10/24/17	West	June	\$269
32	10/25/17	Southwest	Chin	\$739
33	10/25/17	West	Gigi	\$1,201
34	10/25/17	Northwest	June	\$546
35	10/25/17	Northwest	Chin	\$162

The names in the first row are
called:

“Column Headers”

or

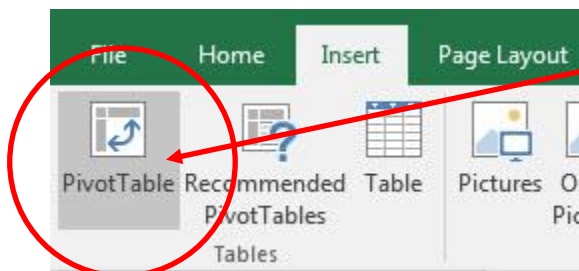
“Field Names”

13	Date	Region	SalesRep	Sales
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484

- ii. To Start a PivotTable, you click in one cell in the Proper Data Set. You can click in any one cell. For the picture here, cell C15 is selected, like:

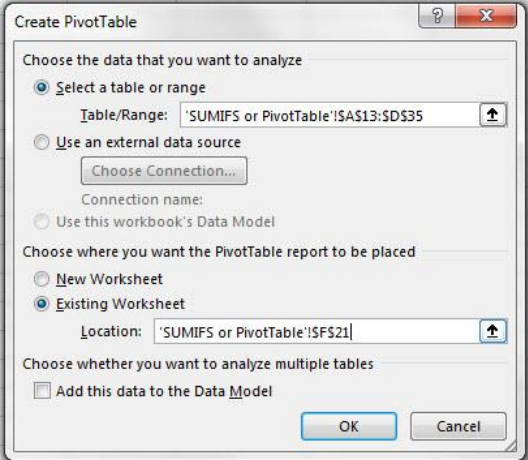
13	Date	Region	SalesRep	Sales
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484
16	10/20/17	West	Freddy	\$376
17	10/20/17	Northwest	Freddy	\$1,141

- iii. Click on the PivotTable button in the Table group in the Insert Ribbon Tab, like:



- iv. The Create PivotTable dialog box will appear. Because we had a single cell selected in our PivotTable, the Table/Range text box has the correct range. Click in the Existing Location / Location text box, then with your Selection Cursor, click in cell F12. The dialog box should look like this::

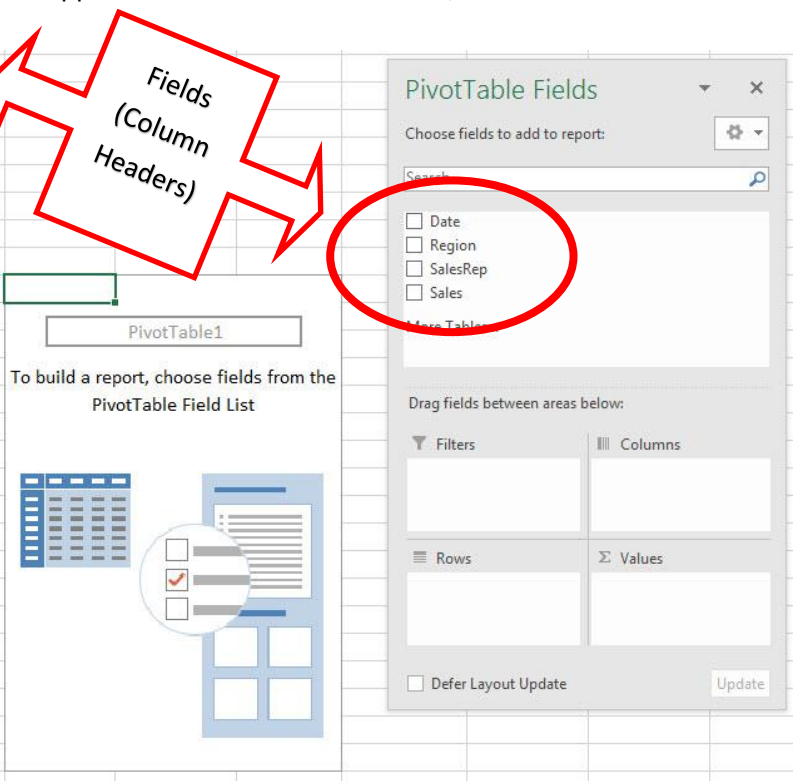
	Date	Region	SalesRep	Sales
13				
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484
16	10/20/17	West	Freddy	\$376
17	10/20/17	Northwest	Freddy	\$1,141
18	10/20/17	Northwest	Chin	\$725
19	10/20/17	West	Chin	\$222
20	10/20/17	West	June	\$1,038
21	10/21/17	Northwest	Chin	\$154
22	10/21/17	Northwest	Gigi	\$205
23	10/21/17	Southwest	Gigi	\$895
24	10/21/17	West	Chin	\$1,254
25	10/22/17	Northwest	June	\$596
26	10/24/17	Southwest	Gigi	\$799
27	10/24/17	Northwest	Gigi	\$651
28	10/24/17	West	June	\$1,235
29	10/24/17	Southwest	Chin	\$684
30	10/24/17	Northwest	June	\$127



The 'Create PivotTable' dialog box is shown. It has two main sections. The first section, 'Choose the data that you want to analyze', has the 'Select a table or range' radio button selected, with the 'Table/Range' text box containing the formula bar reference '=SUMIFS or PivotTable!\$A\$13:\$D\$35'. The second section, 'Choose where you want the PivotTable report to be placed', has the 'Existing Worksheet' radio button selected, with the 'Location' text box containing the formula bar reference '=SUMIFS or PivotTable!\$F\$21'. There are also options for 'Use an external data source' and 'Use this workbook's Data Model'. At the bottom, there is an 'Add this data to the Data Model' checkbox and 'OK' and 'Cancel' buttons.

- v. After you click OK, you will see an Empty PivotTable appear in the sheet and you will see the PivotTable Field List. Notice that the Field Names in the Proper Data Set appear in the PivotTable Field List, like this:

	Date	Region	SalesRep	Sales
13				
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484
16	10/20/17	West	Freddy	\$376
17	10/20/17	Northwest	Freddy	\$1,141
18	10/20/17	Northwest	Chin	\$725
19	10/20/17	West	Chin	\$222
20	10/20/17	West	June	\$1,038
21	10/21/17	Northwest	Chin	\$154
22	10/21/17	Northwest	Gigi	\$205
23	10/21/17	Southwest	Gigi	\$895
24	10/21/17	West	Chin	\$1,254
25	10/22/17	Northwest	June	\$596
26	10/24/17	Southwest	Gigi	\$799
27	10/24/17	Northwest	Gigi	\$651
28	10/24/17	West	June	\$1,235
29	10/24/17	Southwest	Chin	\$684
30	10/24/17	Northwest	June	\$127
31	10/24/17	West	June	\$269
32	10/25/17	Southwest	Chin	\$739
33	10/25/17	West	Gigi	\$1,201
34	10/25/17	Northwest	June	\$546
35	10/25/17	Northwest	Chin	\$162



The screenshot shows the Excel interface after creating a PivotTable. A red oval highlights the first row of the source data table (row 14). A red arrow points from this oval to a text box that says 'Fields (Column Headers)'. Another red oval highlights the 'PivotTable Fields' task pane on the right. In this task pane, the 'Date', 'Region', 'SalesRep', and 'Sales' fields are listed with checkboxes next to them. The 'Columns' area is empty, and the 'Values' area contains a summation symbol (Σ) followed by 'Sales'. The 'Filters' and 'Rows' areas are also empty. At the bottom of the task pane, there is a 'Defer Layout Update' checkbox and an 'Update' button.

- vi. Using the Check Box for the “Region” Field in the PivotTable Field List, check the box for “Region”, and a unique list of Region Names will appear in the PivotTable Report, like:

13	Date	Region	SalesRep	Sales
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484
16	10/20/17	West	Freddy	\$376
17	10/20/17	Northwest	Freddy	\$1,141
18	10/20/17	Northwest	Chin	\$725
19	10/20/17	West	Chin	\$222
20				\$1,038
21				\$154
22				\$205
23				\$895
24				\$1,254
25				\$596
26				\$799
27	10/24/17	Northwest	Gigi	\$651
28	10/24/17	West	June	\$1,235
29	10/24/17	Southwest	Chin	\$684
30	10/24/17	Northwest	June	\$127
31	10/24/17	West	June	\$269
32	10/25/17	Southwest	Chin	\$739
33	10/25/17	West	Gigi	\$1,201
34	10/25/17	Northwest	June	\$546
35	10/25/17	Northwest	Chin	\$162
36				

Unique List
or
Distinct List

Row Labels
Northwest
Southwest
West
Grand Total

PivotTable Fields

Choose fields to add to report:

Search

☐ Date
☒ Region
☐ SalesRep
☐ Sales

Drag fields between areas below:

Filters
Columns
Rows
Region
Values
Sum of Sales

Defer Layout Update Update

- vii. Using the Check Box for the “Sales” Field in the PivotTable Field List, check the box for “Sales”, and the total sales for each Region will appear in the PivotTable Report, like:

13	Date	Region	SalesRep	Sales
14	10/20/17	West	Gigi	\$620
15	10/20/17	Northwest	Gigi	\$484
16	10/20/17	West	Freddy	\$376
17	10/20/17	Northwest	Freddy	\$1,141
18	10/20/17	Northwest	Chin	\$725
19	10/20/17	West	Chin	\$222
20	10/20/17	West	June	\$1,038
21	10/21/17	Northwest	Chin	\$154
22	10/21/17	Northwest	Gigi	\$205
23	10/21/17	Southwest	Gigi	\$895
24	10/21/17	West	Chin	\$1,254
25	10/22/17	Northwest	June	\$596
26	10/24/17	Southwest	Gigi	\$799
27	10/24/17	Northwest	Gigi	\$651
28	10/24/17	West	June	\$1,235
29	10/24/17	Southwest	Chin	\$684
30	10/24/17	Northwest	June	\$127
31	10/24/17	West	June	\$269
32	10/25/17	Southwest	Chin	\$739
33	10/25/17	West	Gigi	\$1,201
34	10/25/17	Northwest	June	\$546
35	10/25/17	Northwest	Chin	\$162
36				

Row Labels Sum of Sales
Northwest 4791
Southwest 3117
West 6215
Grand Total 14123

PivotTable Fields

Choose fields to add to report:

Search

☐ Date
☒ Region
☐ SalesRep
☒ Sales

Drag fields between areas below:

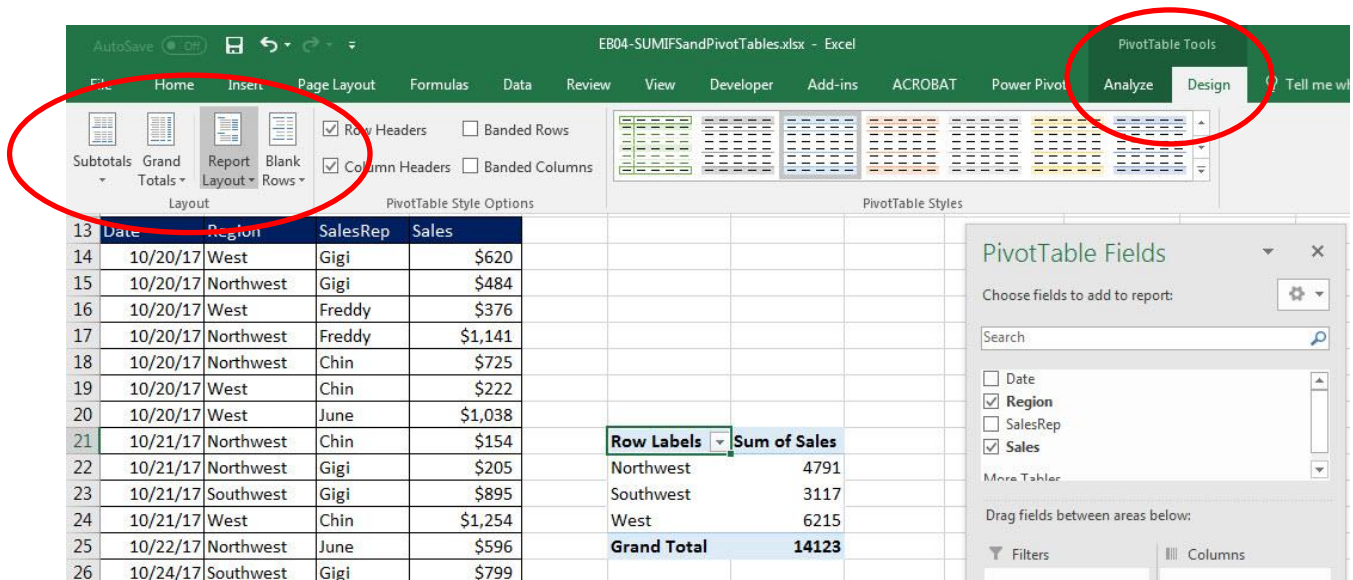
Filters
Columns
Rows
Region
Values
Sum of Sales

Defer Layout Update Update

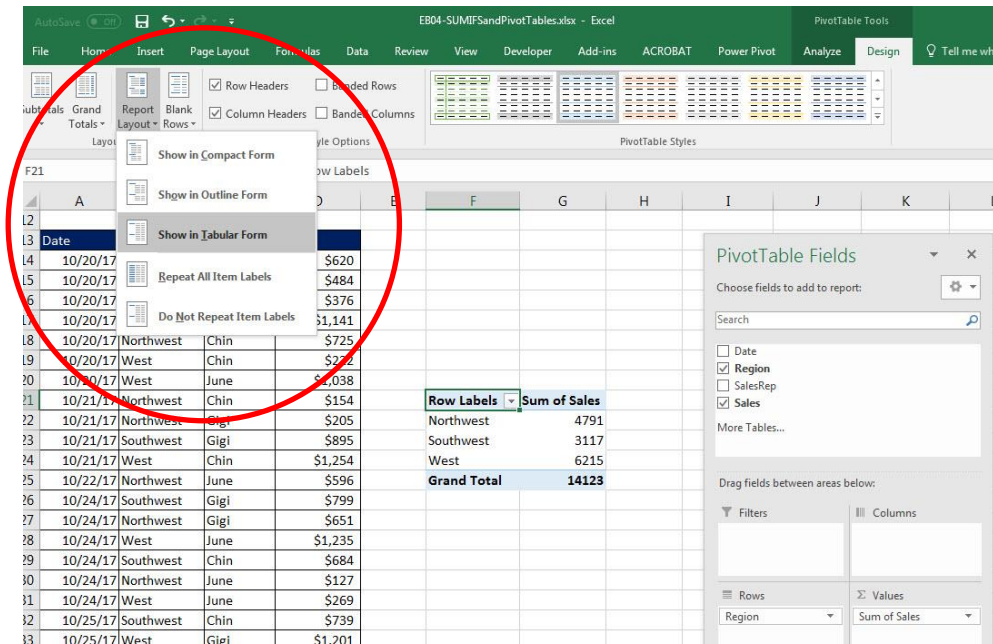
- viii. Notice that the label above the Region names says “Row Labels”. This is not a smart name for our report. We would like to change it to show the Field Name / Column Header Name.

ix.

- x. With a cell selected in the PivotTable, click on PivotTable Tools Design Ribbon Tab, go to the Layout group, like:



- xi. Click drop-down for Report Layout and then click on “Show in Tabular Form”.



- xii. After we choose “Show in Tabular Form”, the Field Name / Column Header Name will show up in report. We can see our Field Name / Column Header Name “Region”, like:

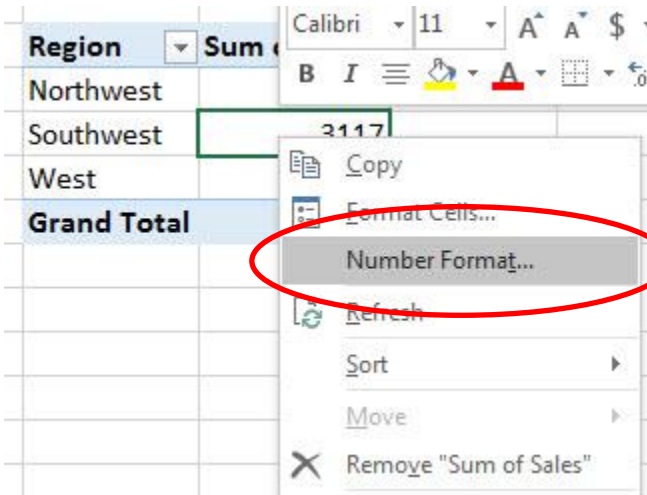
Region	Sum of Sales
Northwest	4791
Southwest	3117
West	6215
Grand Total	14123

xiii. Now We need to add Number Formatting to the Sales Field.

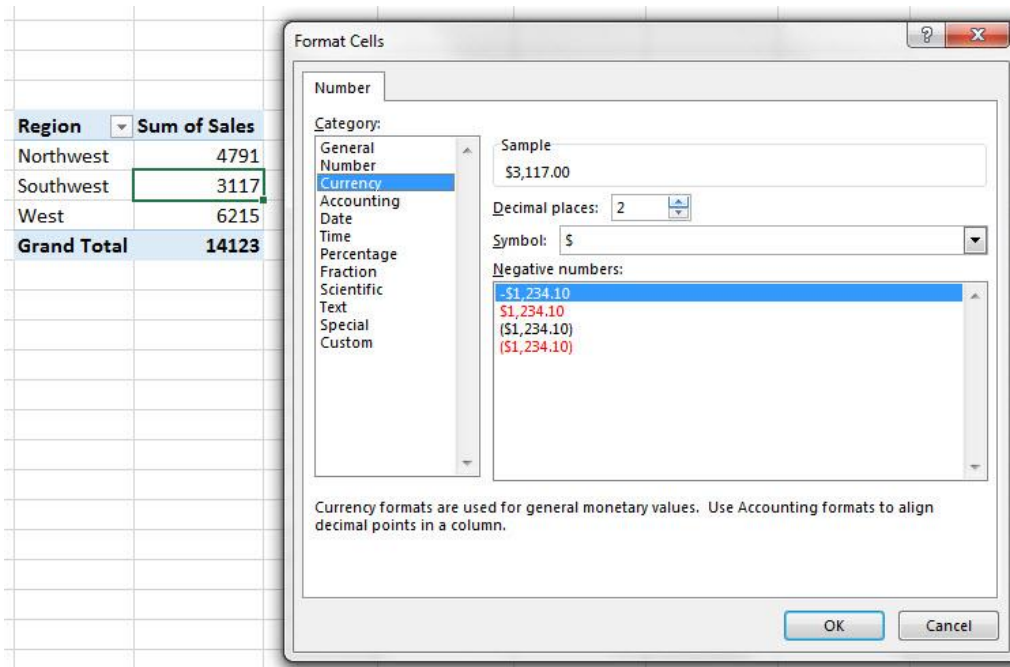
xiv. Click in one cell in the Sum of Sales column, like:

Region	Sum of Sales
Northwest	4791
Southwest	3117
West	6215
Grand Total	14123

xv. Right-click the cell and click on “Number Format...”, like:



xvi. In the Number Formatting dialog box select the Number Formatting that you would like and then click OK. Be sure to notice that because we selected the “Number Format...” option in the previous step, the dialog box has only one tab, and that tab is “Number” (this is a different dialog box than the Format Cells dialog box that has six tabs, and it will add Number Formatting to the actual “Sum of Sales” area of the PivotTable.

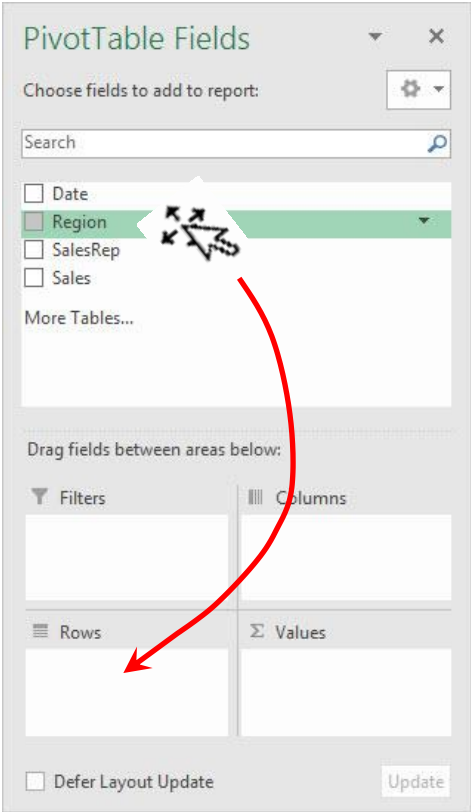


xvii. The finished Report looks like this:

13	Date	Region	SalesRep	Sales		
14	10/20/17	West	Gigi	\$620		
15	10/20/17	Northwest	Gigi	\$484		
16	10/20/17	West	Freddy	\$376		
17	10/20/17	Northwest	Freddy	\$1,141		
18	10/20/17	Northwest	Chin	\$725		
19	10/20/17	West	Chin	\$222		
20	10/20/17	West	June	\$1,038		
21	10/21/17	Northwest	Chin	\$154	Region	Sum of Sales
22	10/21/17	Northwest	Gigi	\$205	Northwest	\$4,791.00
23	10/21/17	Southwest	Gigi	\$895	Southwest	\$3,117.00
24	10/21/17	West	Chin	\$1,254	West	\$6,215.00
25	10/22/17	Northwest	June	\$596	Grand Total	\$14,123.00
26	10/24/17	Southwest	Gigi	\$799		
27	10/24/17	Northwest	Gigi	\$651		
28	10/24/17	West	June	\$1,235		
29	10/24/17	Southwest	Chin	\$684		
30	10/24/17	Northwest	June	\$127		
31	10/24/17	West	June	\$269		
32	10/25/17	Southwest	Chin	\$739		
33	10/25/17	West	Gigi	\$1,201		
34	10/25/17	Northwest	June	\$546		
35	10/25/17	Northwest	Chin	\$162		

5) Drag & Drop Fields in PivotTable Field Task Pane

- i. Rather than use the Check Boxes in the PivotTable Field Task Pane, you can have more control by using your Move Cursor to drag & drop fields in the PivotTable Field Task Pane, like in this picture:



- ii.

6) Summary of how to create PivotTable for Video 04

- i. Click in one cell in Proper Data Set
- ii. Insert Ribbon Tab, Tables group, PivotTable button.
- iii. From Field List, drag field name to Rows area or Columns area. These are the conditions/criteria for the calculation in the Values area of the PivotTable.
- iv. From Field List drag the field you would like to make a calculation on to values area.
- v. With a cell selected in the PivotTable, click on PivotTable Tools Design Ribbon Tab, go to the Layout group, click drop-down for Report Layout and then click on "Show in Tabular Form".
- vi. To add Number Formatting to the Values area of the PivotTable, click in one cell in the Values area of the PivotTable, Right-click the cell and click on "Number Format...", then in the Number Formatting dialog box select the Number Formatting that you would like and then click OK.

7) Compare SUMIFS and PivotTable

- i. Advantage of PivotTable:
 1. Quick and easy to make.
 2. Conditions or Criteria in Rows area are created automatically
- ii. Disadvantage of PivotTable:
 1. If source data changes, you must right-click PivotTable and point to Refresh.
- iii. Advantage of SUMIFS:
 1. If source data changes, formulas update instantly.
- iv. Disadvantage of SUMIFS:
 1. Have to type out conditions/criteria for Rows area

8) Picture of Data Analysis

Date	Region	SalesRep	Sales
10/20/17	West	Gigi	\$620
10/20/17	Northwest	Gigi	\$484
10/20/17	West	Freddy	\$376
10/20/17	Northwest	Freddy	\$1,141
10/20/17	Northwest	Chin	\$725
10/20/17	West	Chin	\$222
10/20/17	West	June	\$1,038
10/21/17	Northwest	June	\$154
10/21/17	Northwest	June	\$205
10/21/17	Southwest	June	\$895
10/21/17	West	June	\$1,254
10/22/17	West	June	\$596
10/24/17	West	Gigi	\$799
10/24/17	West	Gigi	\$651
10/24/17	West	June	\$1,235
10/24/17	Southwest	Chin	\$684
10/24/17	Northwest	June	\$127
10/24/17	West	June	\$269
10/25/17	Southwest	Chin	\$739
10/25/17	West	Gigi	\$1,201
10/25/17	Northwest	June	\$546
10/25/17	Northwest	Chin	\$162

Raw Data

Into

Region	Sum of Sales
Northwest	\$4,791
Southwest	\$3,117
West	\$6,215
Grand Total	\$14,123

Useful Information

Region	Total
Northwest	\$4,791
Southwest	\$3,117
West	\$6,215