Data Analytics Tutorial: Contribution Margin, CM Ratio, and Segment Margins Using Excel Pivot Tables and Charts

Cabinet Accessories Company (CAC) dataset

Welcome to this data analytics tutorial that covers sales, cost, and gross profit analysis using pivot tables and charts in Excel.

Cabinet Accessories Company (CAC)

- CAC is a fictitious company that sells cabinet hardware including knobs and pulls
- Data set contains sales and cost data for 2014 – 2018
- In this tutorial, we are using a small, 36-record data set
- For the actual activity, you will be using the full data set so the answers will be different but the process will be similar

In this activity, we are using a sales and cost data set for a fictitious company, Cabinet Accessories Company (CAC.) The sales and cost data covers 2014 – 2018. For this tutorial only, we are using a small, 36-record data set. For the actual activity, you will be using the full data set so the answers for the activity requirements will be different – but the process will be similar.

Pivot tables and pivot charts

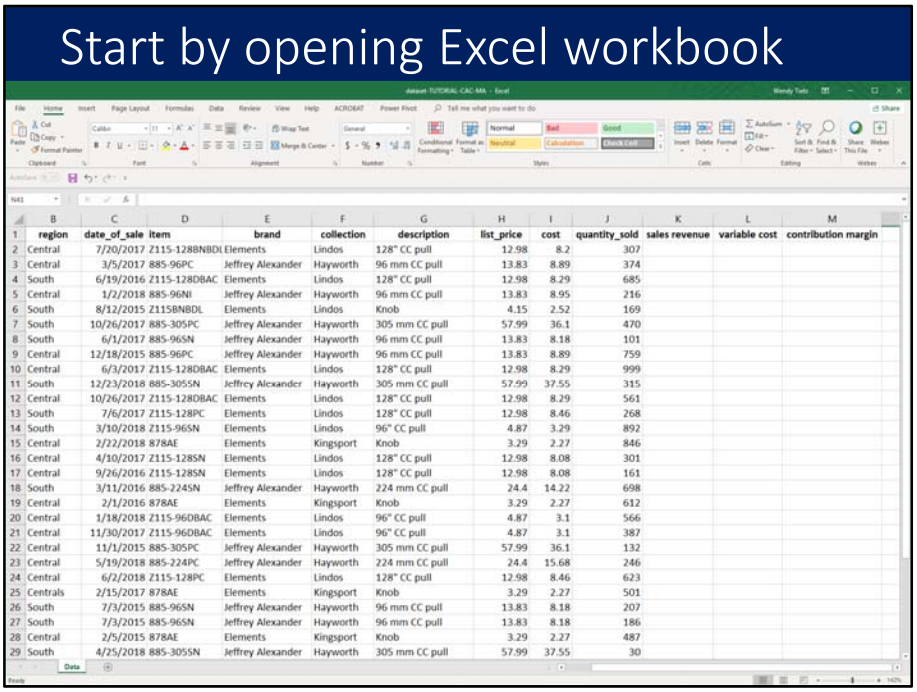
- Using Office 365 Excel in Windows in this tutorial
- Other versions of Excel may be slightly different
- May be many ways of accomplishing the same thing – just presenting one way here

For this tutorial on pivot tables and pivot charts, we will be demonstrating using Office 365 Excel for Windows. Other versions of Excel may be slightly different. Also note that there may be many ways of accomplishing the same thing – we are just presenting one way here. Make sure your version of Office 365 is updated; you may not see things the same way if you have not updated recently.



Again, please be sure to update your version of Excel before working on this project. Certain features will not work if you are not using the most current version of Excel.

Start by opening Excel workbook



	B	C	D	E	F	G	H	I	J	K	L	M
1	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribution margin
2	Central	7/20/2017	Z115-128BNBDI	Elements	Lindos	128" CC pull	12.98	8.2	307			
3	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374			
4	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685			
5	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216			
6	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169			
7	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470			
8	South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101			
9	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759			
10	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999			
11	South	12/23/2018	885-3055N	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315			
12	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561			
13	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268			
14	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892			
15	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846			
16	Central	4/10/2017	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	301			
17	Central	9/26/2016	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	161			
18	South	3/11/2016	885-224SN	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	14.22	698			
19	Central	2/1/2016	878AE	Elements	Kingsport	Knob	3.29	2.27	612			
20	Central	1/18/2018	Z115-96DBAC	Elements	Lindos	96" CC pull	4.87	3.1	566			
21	Central	11/30/2017	Z115-96DBAC	Elements	Lindos	96" CC pull	4.87	3.1	387			
22	Central	11/1/2015	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	132			
23	Central	5/19/2018	885-224PC	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	15.68	246			
24	Central	6/2/2018	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	623			
25	Centrals	2/15/2017	878AE	Elements	Kingsport	Knob	3.29	2.27	501			
26	South	7/3/2015	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	207			
27	South	7/3/2015	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	186			
28	Central	2/5/2015	878AE	Elements	Kingsport	Knob	3.29	2.27	487			
29	South	4/25/2018	885-3055N	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	30			

Start this activity by opening the Excel workbook containing the data set.

General instructions

You will be using the Excel file provided to create pivot tables and other data. Step-by-step instructions using the tutorial data set follow for each of the requirements for the assignment.

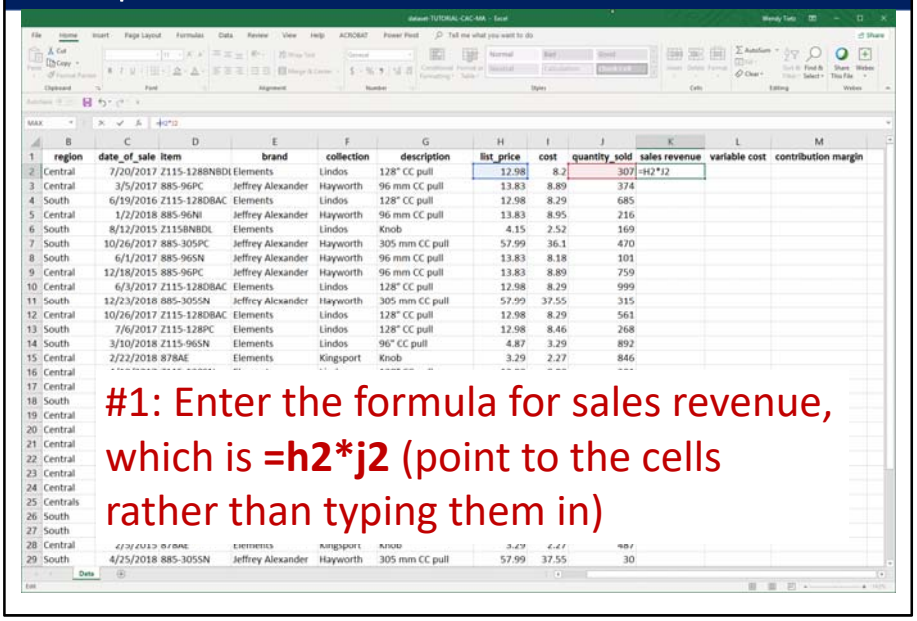
You will be using the Excel file provided to create pivot tables and other data. Step-by-step instructions using the tutorial data set follow for each of the requirements for the assignment.

Requirement 1

Create three columns in the Data worksheet that calculate sales revenue, variable cost, and contribution margin for each sales record

Requirement 1 asks “Create three columns in the Data worksheet that calculate sales revenue, variable cost, and contribution margin for each sales record.”

Req 1: Create 3 columns

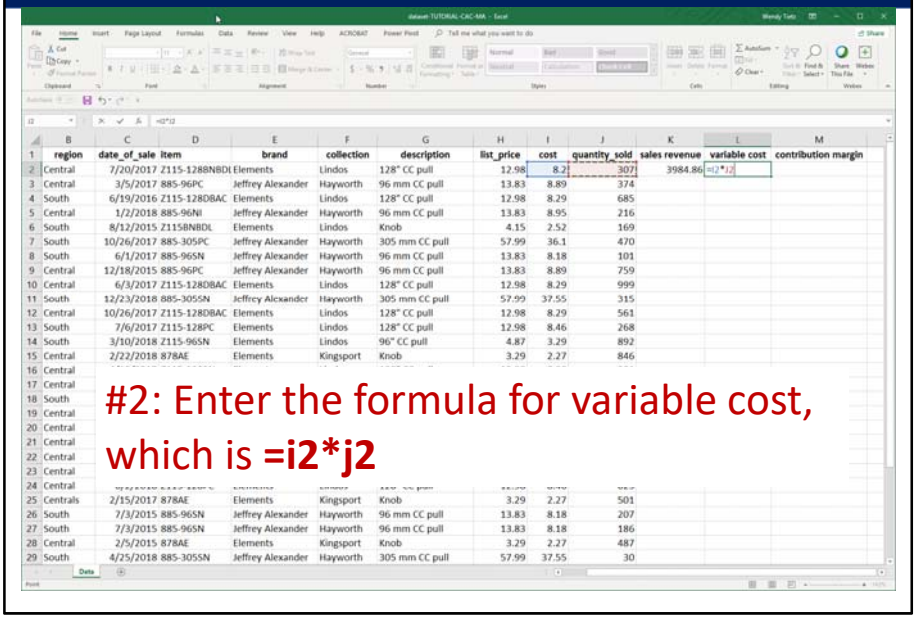


	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribution margin
2	Central	7/20/2017	Z115-128BNBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	=H2*J2		
3	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374			
4	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685			
5	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216			
6	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169			
7	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470			
8	South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101			
9	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759			
10	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999			
11	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315			
12	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561			
13	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268			
14	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892			
15	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846			
16	Central											
17	Central											
18	South											
19	Central											
20	Central											
21	Central											
22	Central											
23	Central											
24	Central											
25	Centrals											
26	South											
27	South											
28	Central											
29	South	4/25/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	30			

#1: Enter the formula for sales revenue, which is **=h2*j2** (point to the cells rather than typing them in)

For the first step in the first requirement, to go Cell K2 in the Data worksheet, which is the cell under the column heading sales revenue. Enter the formula for sales revenue, which is =h2*j2. Point to the cells rather than typing them in.

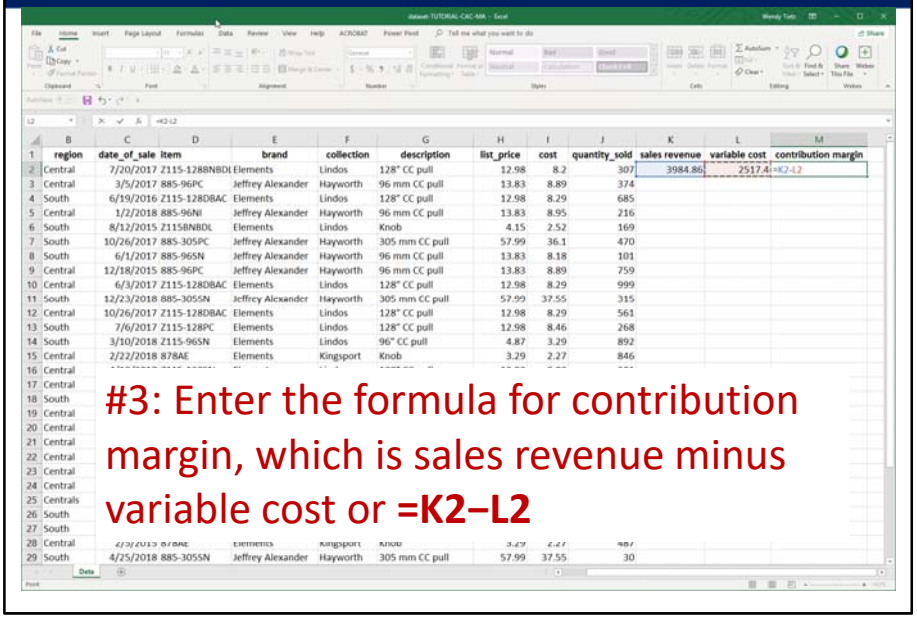
Req 1: Create 3 columns



	B	C	D	E	F	G	H	I	J	K	L	M
1	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribution margin
2	Central	7/20/2017	Z115-1288NBDL	Elements	Lindos	128" CC pull	12.98	8.21	307	3984.86	=i2*j2	
3	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374			
4	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685			
5	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216			
6	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169			
7	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470			
8	South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101			
9	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759			
10	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999			
11	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315			
12	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561			
13	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268			
14	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892			
15	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846			
16	Central											
17	Central											
18	South											
19	Central											
20	Central											
21	Central											
22	Central											
23	Central											
24	Central											
25	Centrals	2/15/2017	878AE	Elements	Kingsport	Knob	3.29	2.27	501			
26	South	7/3/2015	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	207			
27	South	7/3/2015	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	186			
28	Central	2/5/2015	878AE	Elements	Kingsport	Knob	3.29	2.27	487			
29	South	4/25/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	30			

For the second step, click in Cell L2, which is right below the column heading variable cost. Enter the formula for variable cost, which is =i2*j2. Again, point to the cells rather than typing in the names.

Req 1: Create 3 columns

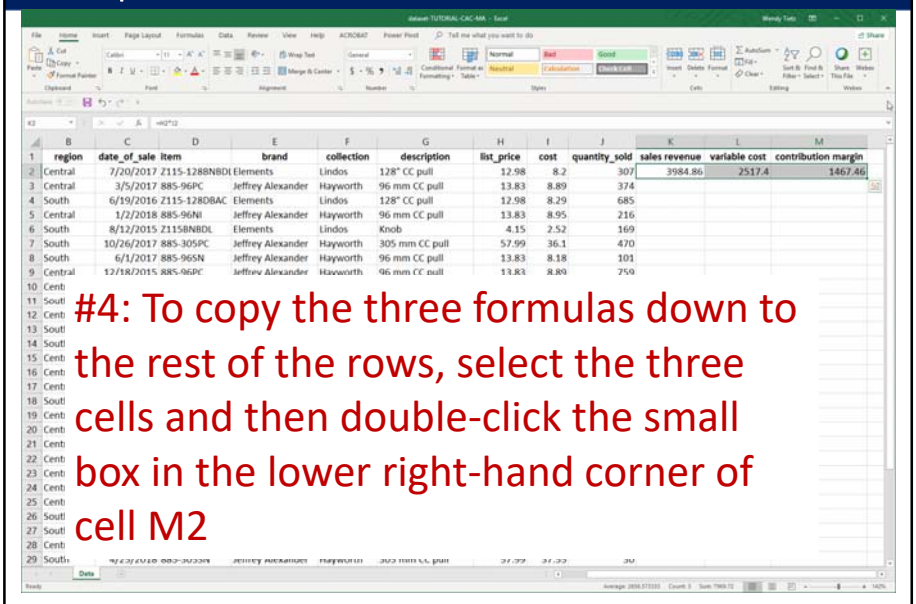


	B	C	D	E	F	G	H	I	J	K	L	M
1	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribution margin
2	Central	7/20/2017	Z115-1288NBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	3984.86	2517.4	=K2-L2
3	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374			
4	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685			
5	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216			
6	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169			
7	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470			
8	South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101			
9	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759			
10	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999			
11	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315			
12	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561			
13	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268			
14	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892			
15	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846			
16	Central											
17	Central											
18	South											
19	Central											
20	Central											
21	Central											
22	Central											
23	Central											
24	Central											
25	Centrals											
26	South											
27	South											
28	Central											
29	South	4/25/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	30			

#3: Enter the formula for contribution margin, which is sales revenue minus variable cost or **=K2−L2**

For the third column, click in cell M2, which is the cell right below the column heading of contribution margin. Enter the formula for contribution margin, which is sales revenue minus variable cost or=K2−L2 (again, point to the cells rather than typing them in – there is a lot less potential for error that way.)

Req 1: Create 3 columns

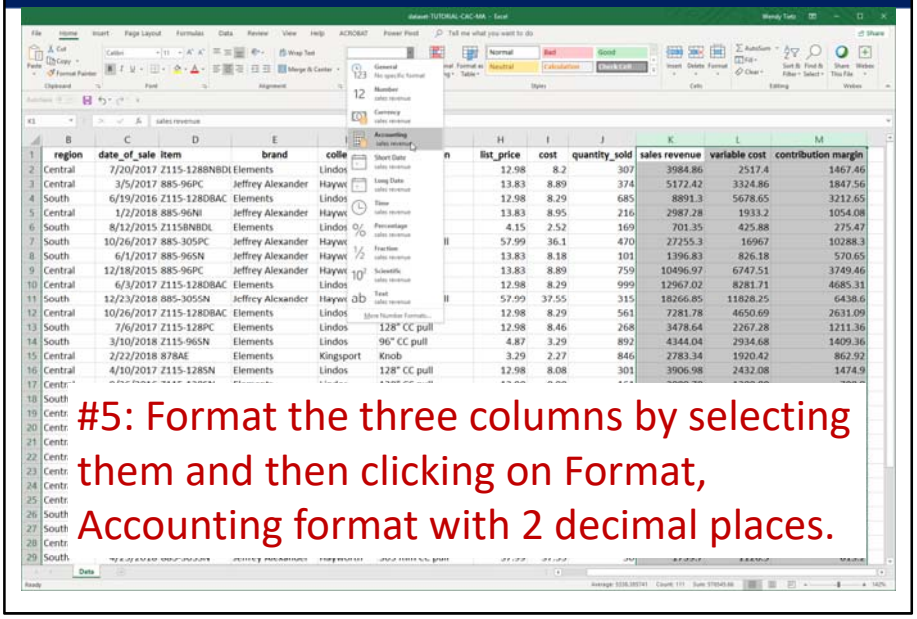


region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribution margin
Central	7/20/2017	Z115-1288NBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	3984.86	2517.4	1467.46
Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374			
South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685			
Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216			
South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169			
South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470			
South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101			
Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759			

#4: To copy the three formulas down to the rest of the rows, select the three cells and then double-click the small box in the lower right-hand corner of cell M2

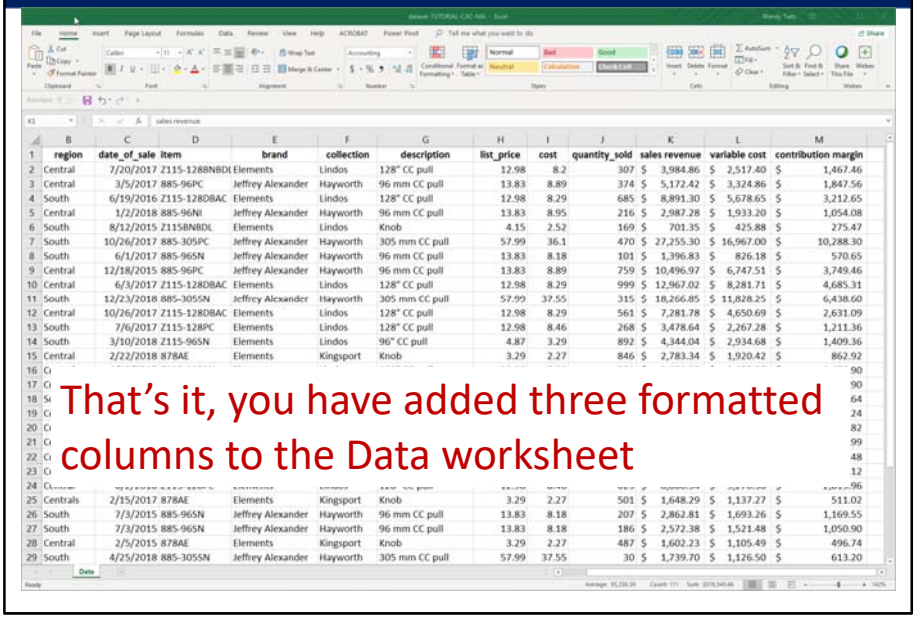
In the fourth step, copy the three formulas down to the rest of the rows by selecting the three cells and then double-clicking the small box in the lower right-hand corner of cell M2.

Req 1: Create 3 columns



For Step 5, format the three columns by selecting the columns and then clicking on Format, Accounting format with 2 decimal places.

Req 1: Create 3 columns



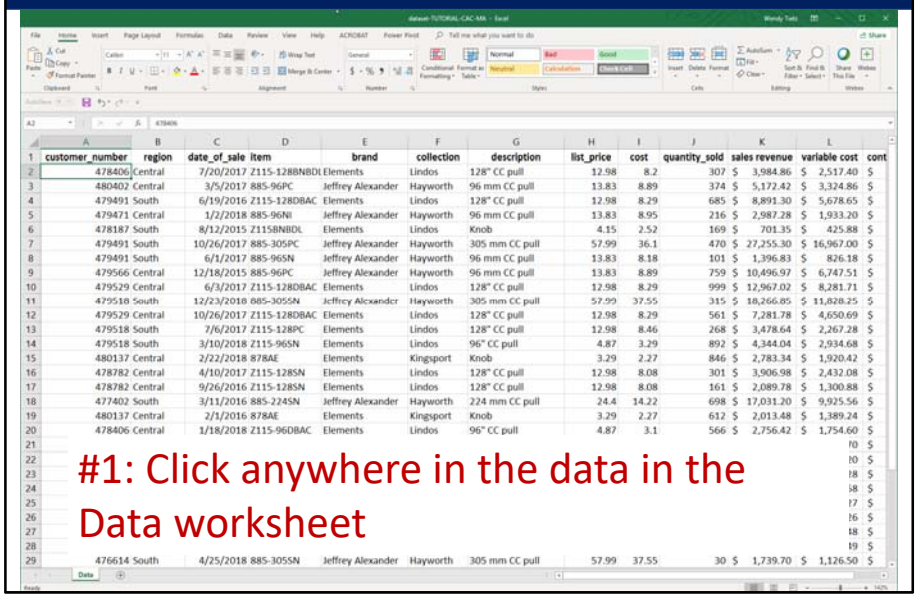
That's it, you have added three formatted columns to the Data worksheet.

Requirement 2

Create a pivot table that shows sales revenue by region for each year. Correct any errors in the data set. Insert a pivot chart to show sales trends.

Requirement 2 states “Create a pivot table that shows sales revenue by region for each year. Correct any errors in the data set. Insert a pivot chart to show sales trends.”

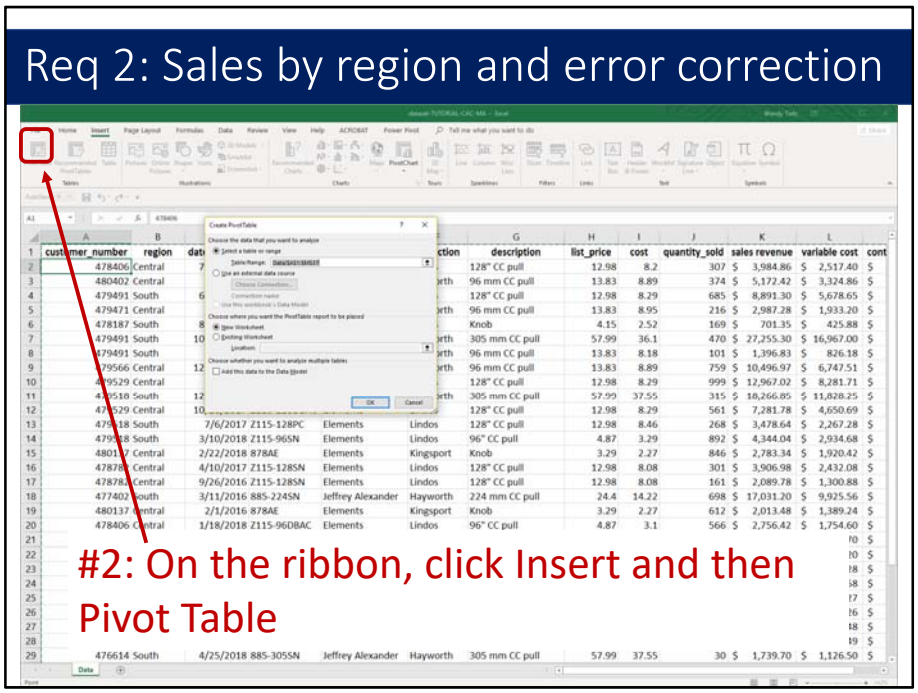
Req 2: Sales by region and error correction



	customer_number	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	cont
2	478406	Central	7/20/2017	Z115-128BNBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	$ 3,984.86	$ 2,517.40	$
3	480402	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374	$ 5,172.42	$ 3,324.86	$
4	479491	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685	$ 8,891.30	$ 5,678.65	$
5	479471	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216	$ 2,987.28	$ 1,933.20	$
6	478187	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169	$ 701.35	$ 425.88	$
7	479491	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470	$ 27,255.30	$ 16,967.00	$
8	479491	South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101	$ 1,396.83	$ 826.18	$
9	479566	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759	$ 10,496.97	$ 6,747.51	$
10	479529	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999	$ 12,967.02	$ 8,281.71	$
11	479518	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315	$ 18,266.85	$ 11,828.25	$
12	479529	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561	$ 7,281.78	$ 4,650.69	$
13	479518	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268	$ 3,478.64	$ 2,267.28	$
14	479518	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892	$ 4,344.04	$ 2,934.68	$
15	480137	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846	$ 2,783.34	$ 1,920.42	$
16	478782	Central	4/10/2017	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	301	$ 3,906.98	$ 2,432.08	$
17	478782	Central	9/26/2016	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	161	$ 2,089.78	$ 1,300.88	$
18	477402	South	3/11/2016	885-224SN	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	14.22	698	$ 17,031.20	$ 9,925.56	$
19	480137	Central	2/1/2016	878AE	Elements	Kingsport	Knob	3.29	2.27	612	$ 2,013.48	$ 1,389.24	$
20	478406	Central	1/18/2018	Z115-96DBAC	Elements	Lindos	96" CC pull	4.87	3.1	566	$ 2,756.42	$ 1,754.60	$
21												70	$
22												10	$
23												18	$
24												58	$
25												17	$
26												16	$
27												18	$
28												19	$
29	476614	South	4/25/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	30	$ 1,739.70	$ 1,126.50	$

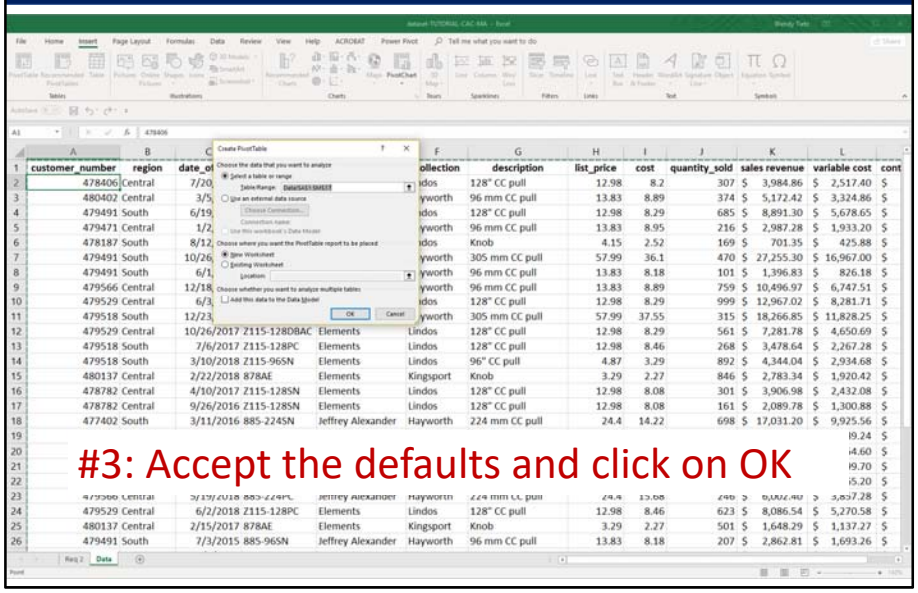
#1: Click anywhere in the data in the Data worksheet

The first step is to click anywhere in the data in the Data worksheet.



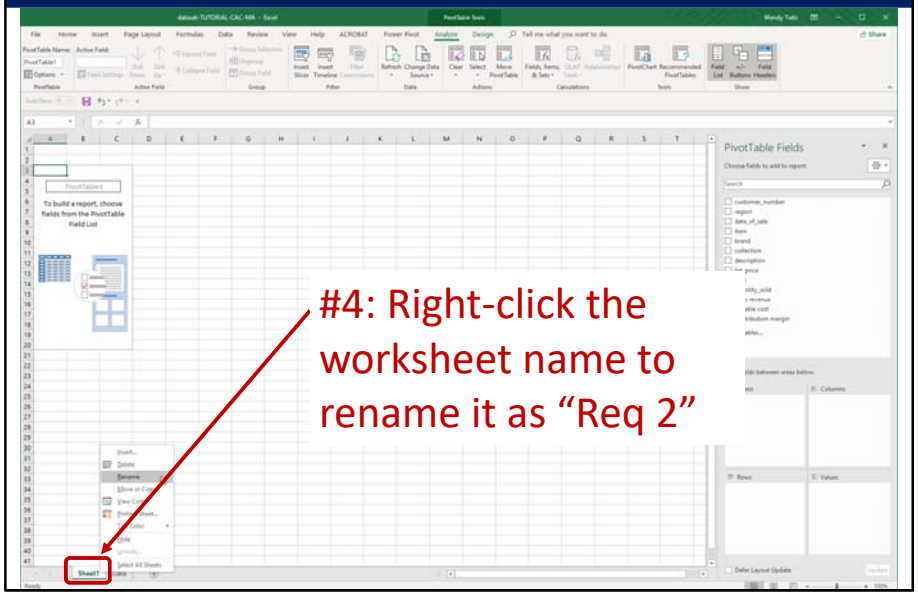
Next, on the ribbon, click Insert and then Pivot Table.

Req 2: Sales by region and error correction

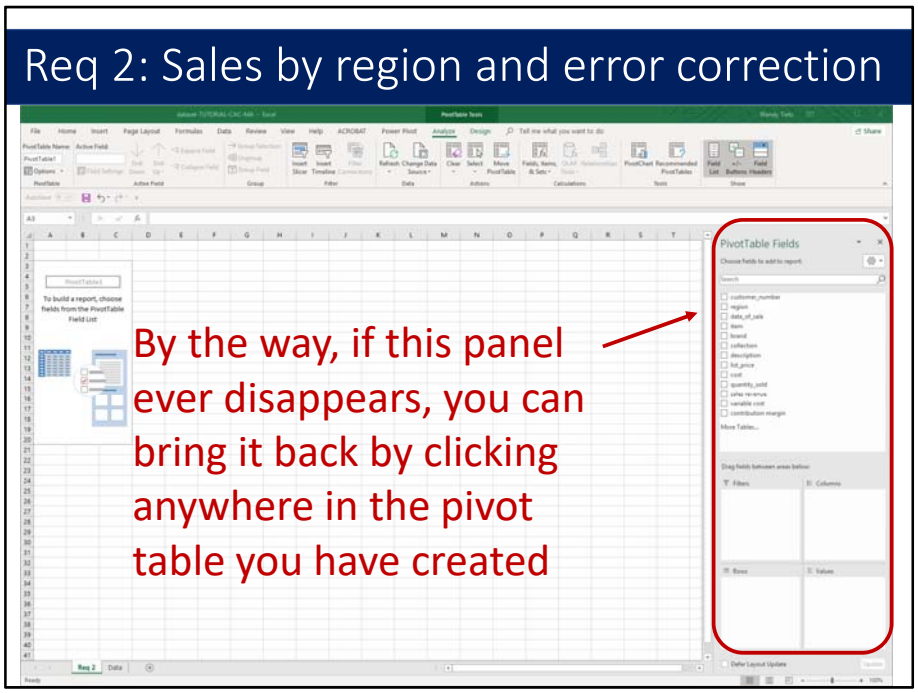


Next, accept the defaults and click on OK.

Req 2: Sales by region and error correction

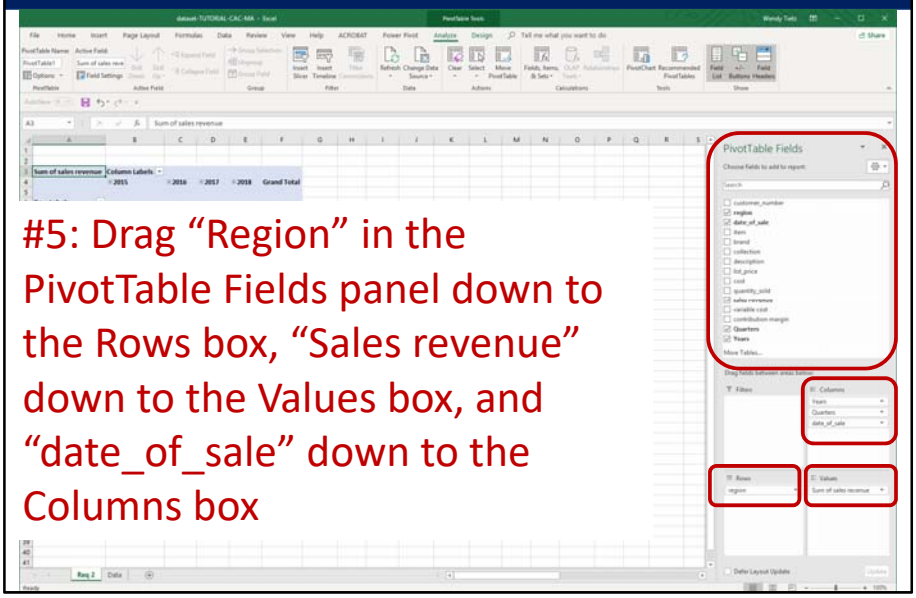


Before we go any further, right-click the worksheet name tab and rename it “Req 2.” That will help to keep track of the different pivot tables.



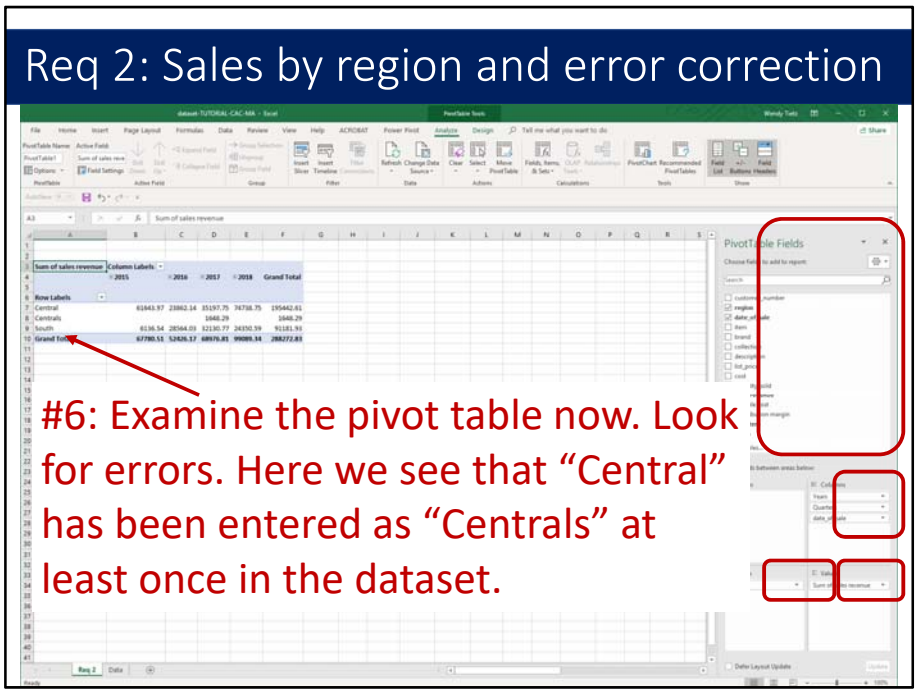
By the way, if the PivotTable Fields panel ever disappears, you can bring it back by clicking anywhere in the pivot table you have created.

Req 2: Sales by region and error correction

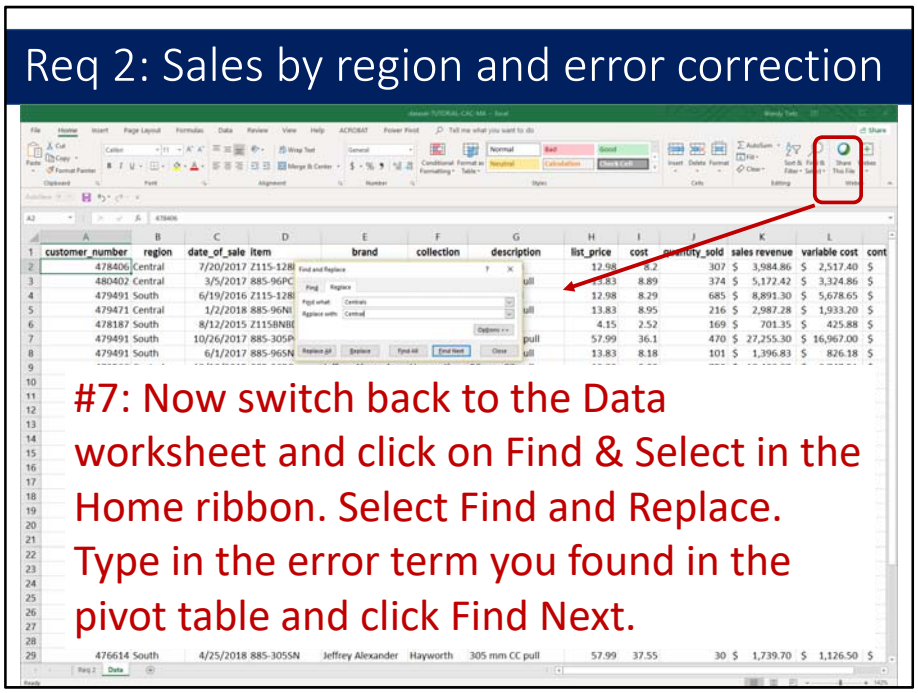


#5: Drag “Region” in the PivotTable Fields panel down to the Rows box, “Sales revenue” down to the Values box, and “date_of_sale” down to the Columns box

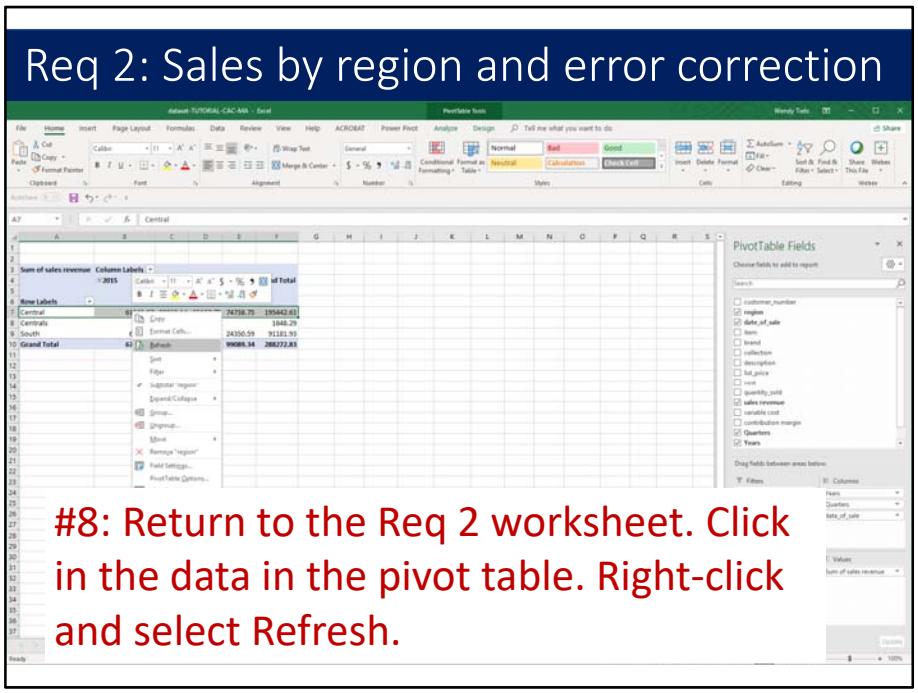
The next step is to drag “Region” in the PivotTable Fields panel down to the Rows box, “Sales revenue” down to the Values box, and “date_of_sale” down to the Columns box.



The next step is examine the pivot table now. Look for errors. Here we see that “Central” has been entered as “Centrals” at least once in the dataset. When you work on the large assigned dataset, there may be different errors, but the same visual inspection technique will work to find any errors.

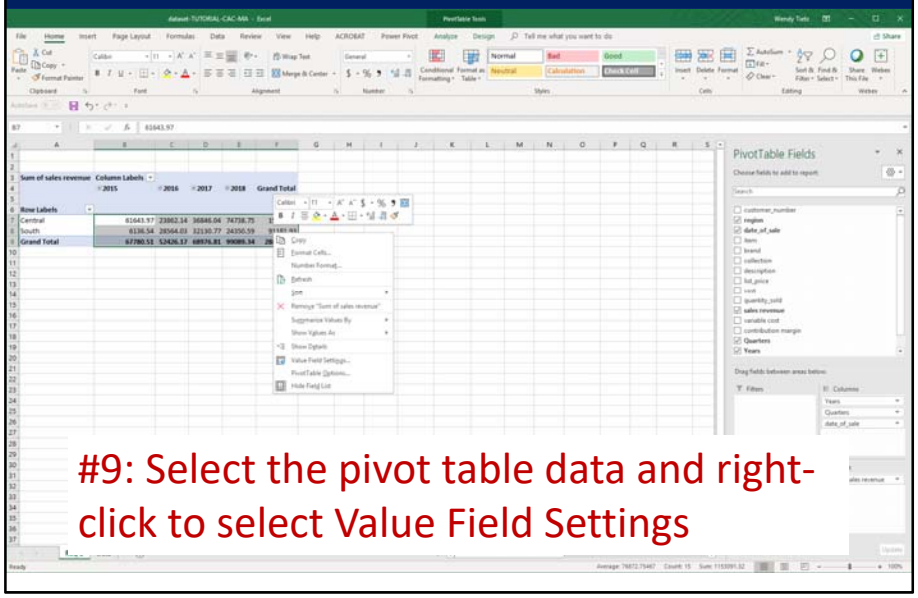


Now switch back to the Data worksheet and click on Find & Select in the Home ribbon. Select Find and Replace. Type in the first error term you found in the pivot table and click Find Next. Replace with the corrected spelling. Do this process for each error you find in the pivot table. Here we had just one, Centrals instead of the correct Central.

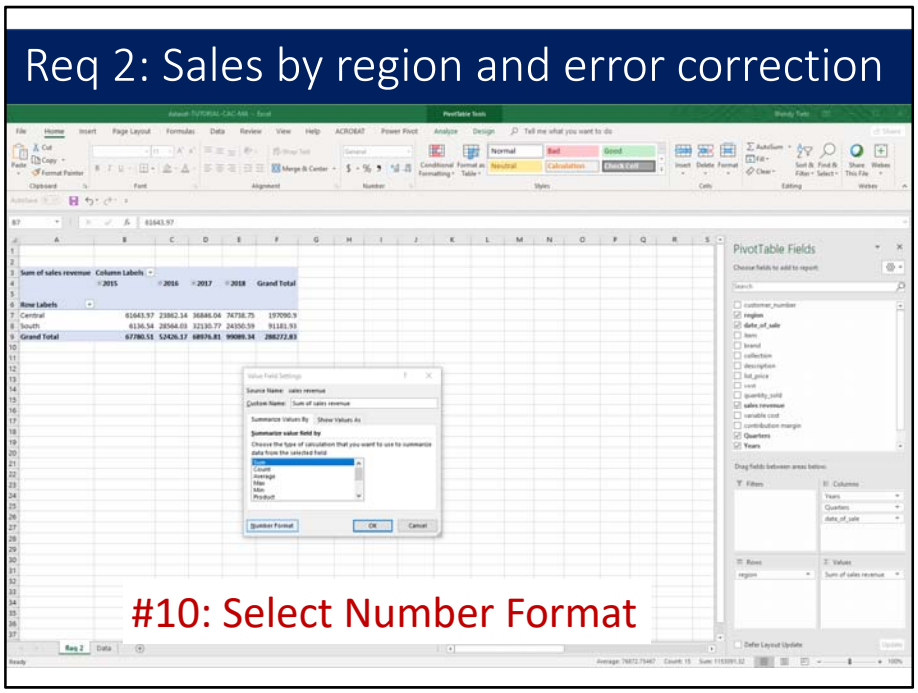


For the next step, return to the Req 2 worksheet. Click in the data in the pivot table. Right-click and select Refresh. This process should update the pivot table so the errors you corrected are no longer in the pivot table.

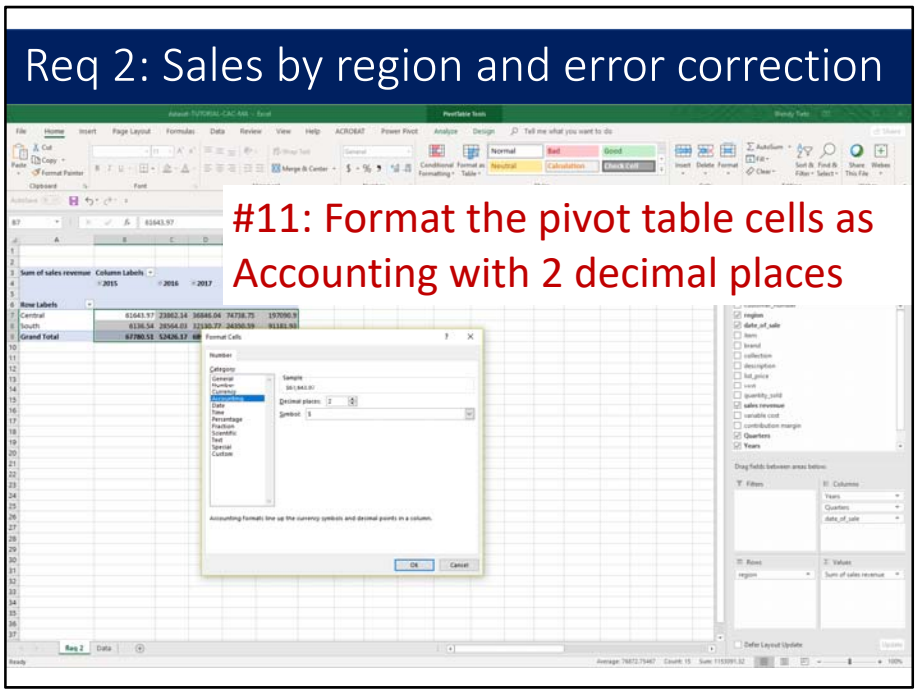
Req 2: Sales by region and error correction



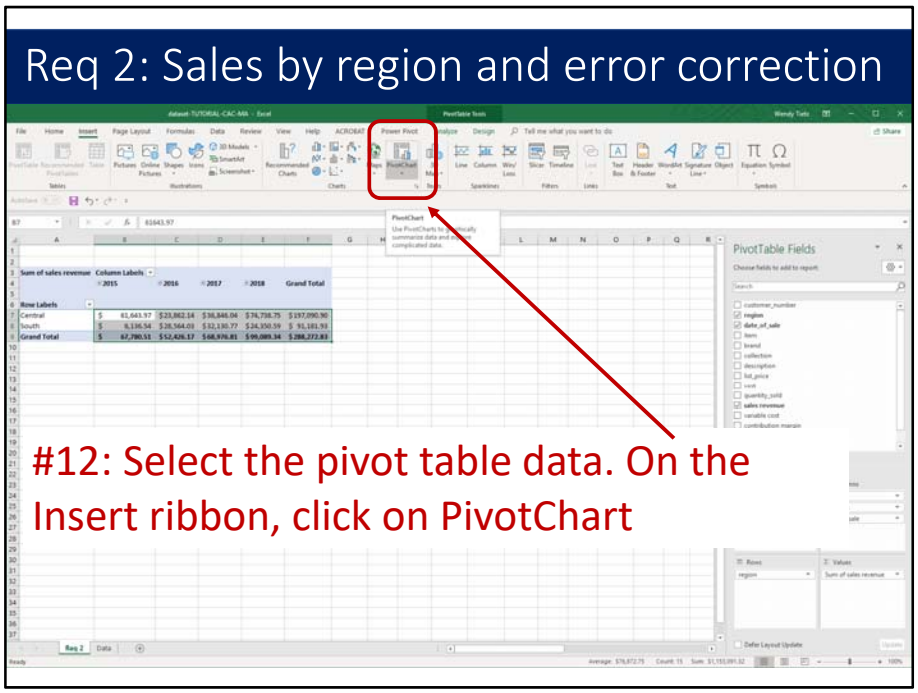
Next, we will format the data in the pivot table. Select the pivot table data and right-click to select Value Field Settings. You will most likely have to format each year of data separately. Just repeat these instructions for each year of data chosen.



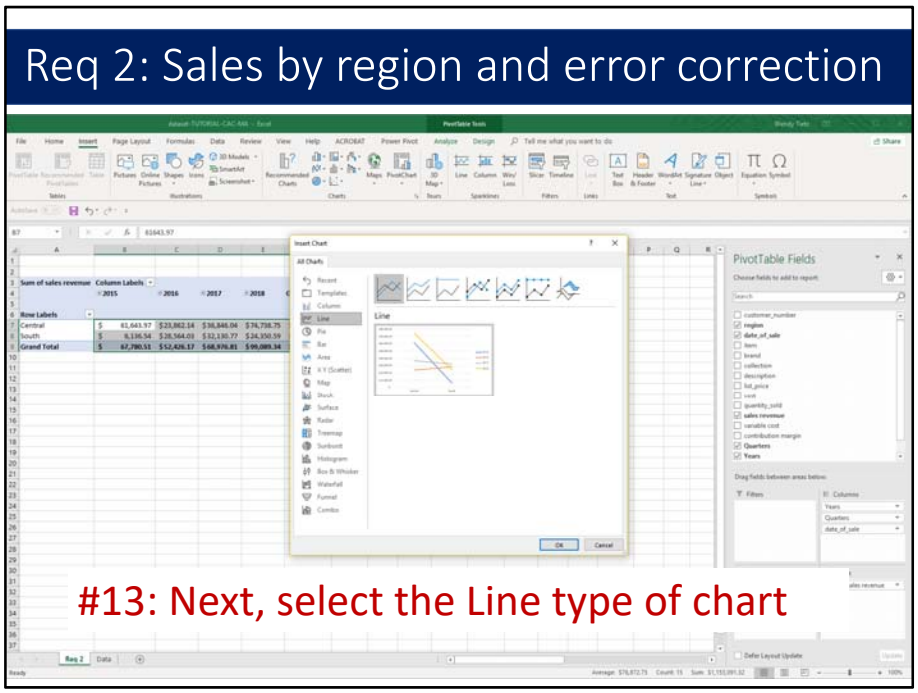
Select Number Format.



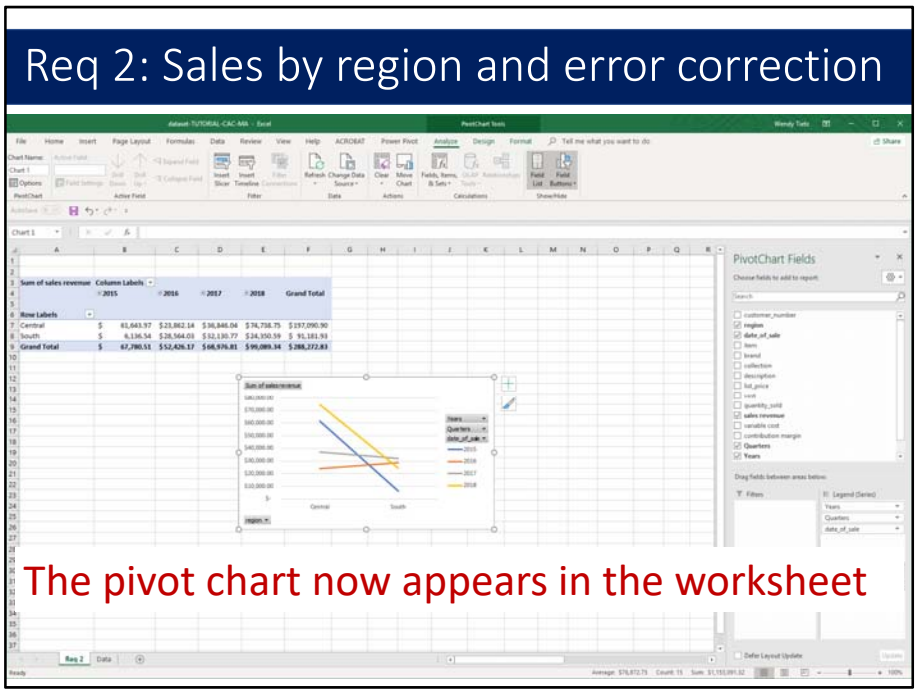
Format the pivot table cells as Accounting with 2 decimal places. Remember that you may need to select each year of data separately to format it – just repeat the steps we just went through.



Now we are going to insert a PivotChart in this same worksheet. Select the pivot table data. On the Insert ribbon, click on PivotChart.

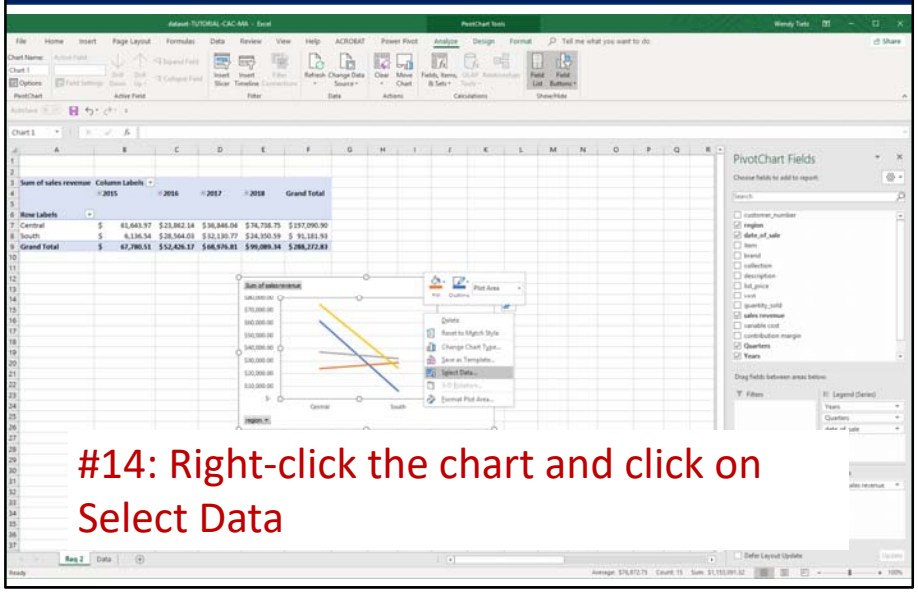


Next, select the Line type of chart and then click on OK.

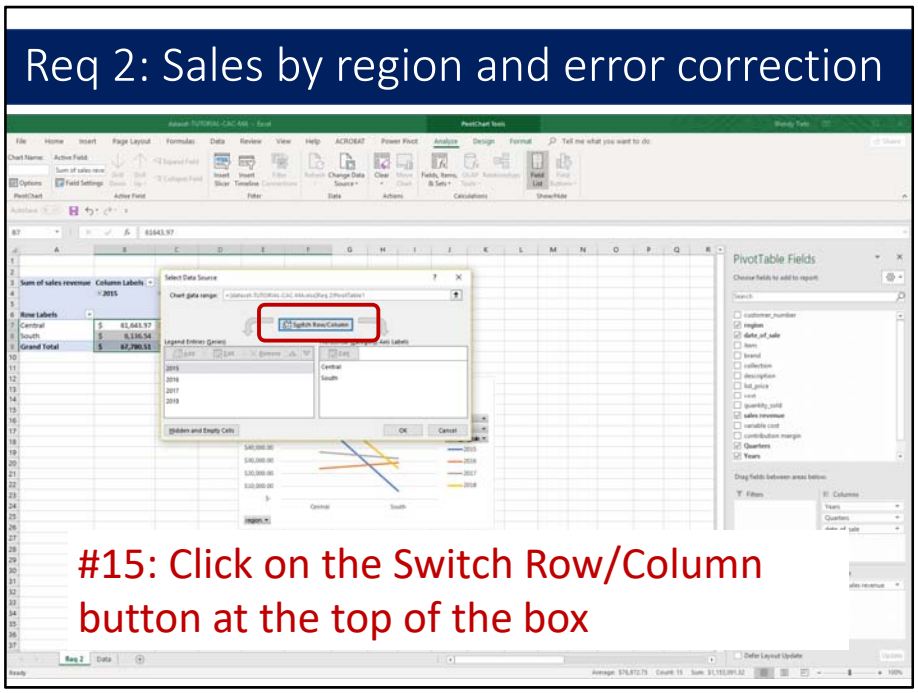


The pivot chart now appears in the worksheet. However, we need to switch the data rows and columns.

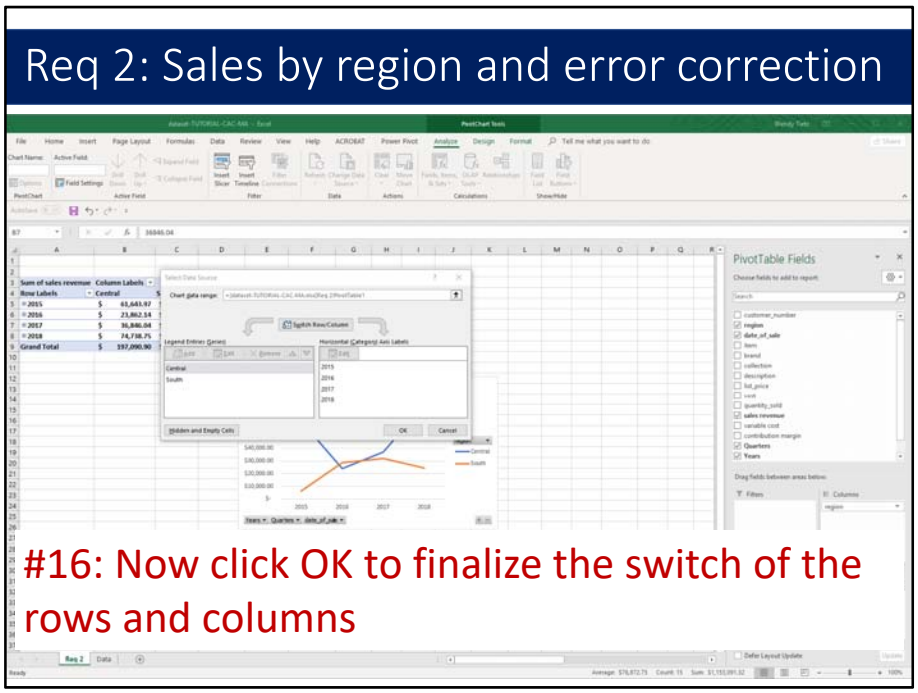
Req 2: Sales by region and error correction



To switch the rows and columns, right-click the chart and click on Select Data.

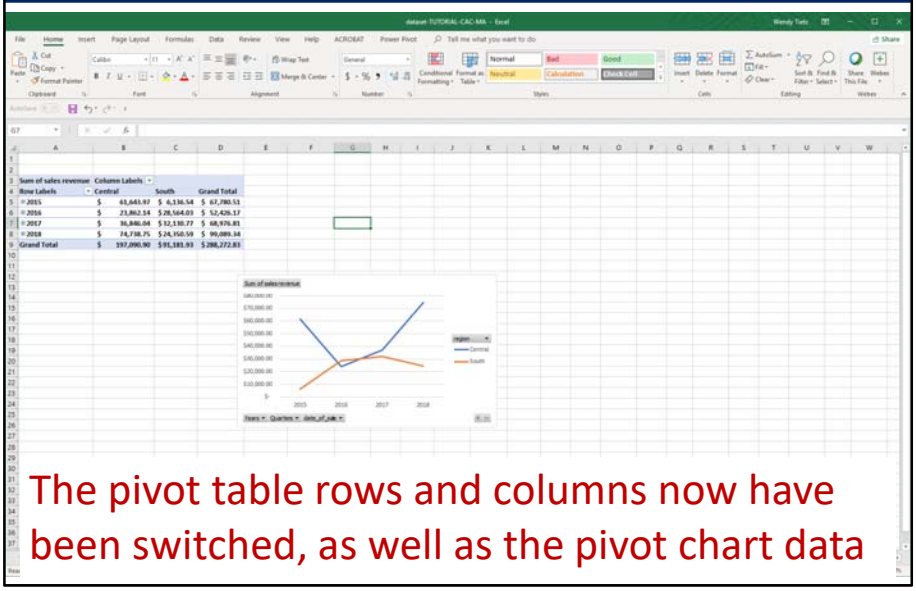


Next, click on the Switch Row/Column button at the top of the box.



Now click OK to finalize the switch of the rows and columns.

Req 2: Sales by region and error correction



The pivot table rows and columns now have been switched, as well as the pivot chart data

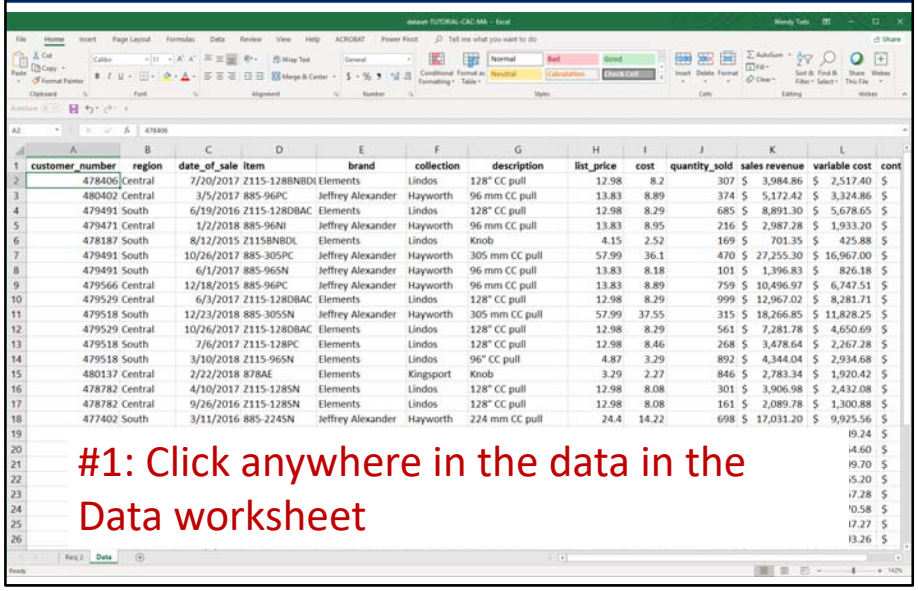
The pivot table rows and columns now have been switched, as well as the pivot chart data.

Requirement 3

Create a pivot table that shows sales revenue, variable costs, and contribution margin for each year for each region.

Requirement 3 reads “Create a pivot table that shows sales revenue, variable costs, and contribution margin for each year.”

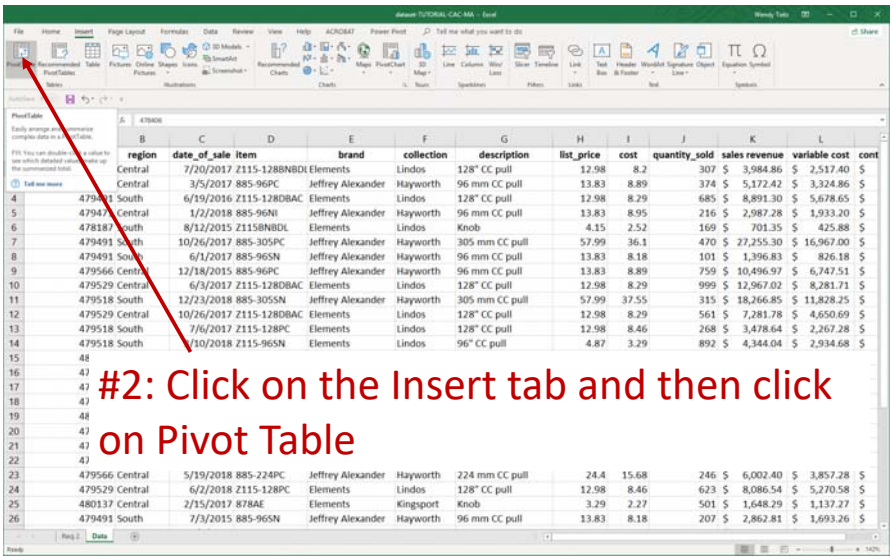
Req 3: Sales, variable cost and CM by year



customer_number	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	cont
478406	Central	7/20/2017	Z115-128BNBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	$ 3,984.86	$ 2,517.40	$
480402	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374	$ 5,172.42	$ 3,324.86	$
479491	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685	$ 8,891.30	$ 5,678.65	$
479471	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216	$ 2,987.28	$ 1,933.20	$
478187	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169	$ 701.35	$ 425.88	$
479491	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470	$ 27,255.30	$ 16,967.00	$
479491	South	6/1/2017	885-96SN	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101	$ 1,396.83	$ 826.18	$
479566	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759	$ 10,496.97	$ 6,747.51	$
479529	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999	$ 12,967.02	$ 8,281.71	$
479518	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315	$ 18,266.85	$ 11,828.25	$
479529	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561	$ 7,281.78	$ 4,650.69	$
479518	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268	$ 3,478.64	$ 2,267.28	$
479518	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892	$ 4,344.04	$ 2,934.68	$
480137	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846	$ 2,783.34	$ 1,920.42	$
478782	Central	4/10/2017	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	301	$ 3,906.98	$ 2,432.08	$
478782	Central	9/26/2016	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	161	$ 2,089.78	$ 1,300.88	$
477402	South	3/11/2016	885-224SN	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	14.22	698	$ 17,031.20	$ 9,925.56	$

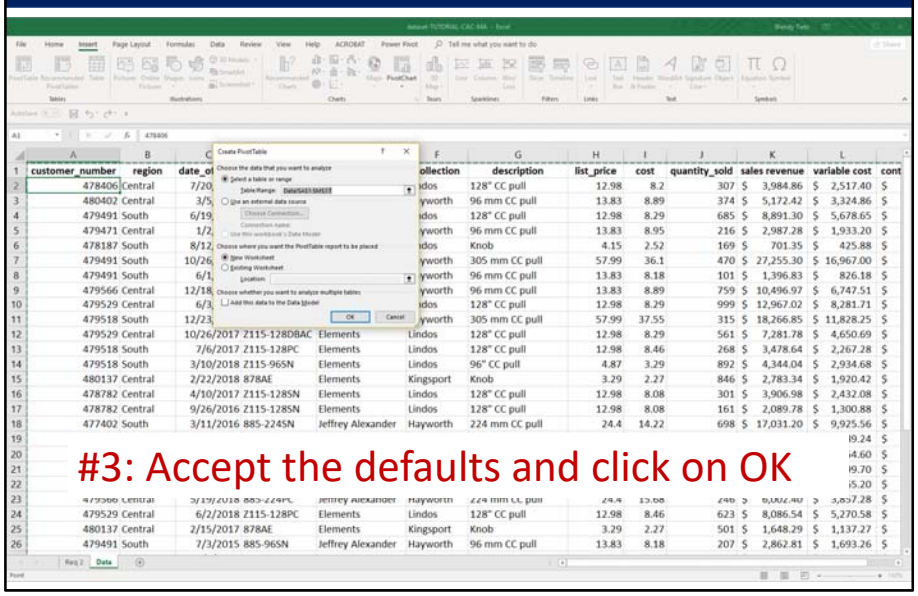
The first step is to click anywhere in the data in the Data worksheet.

Req 3: Sales, variable cost and CM by year



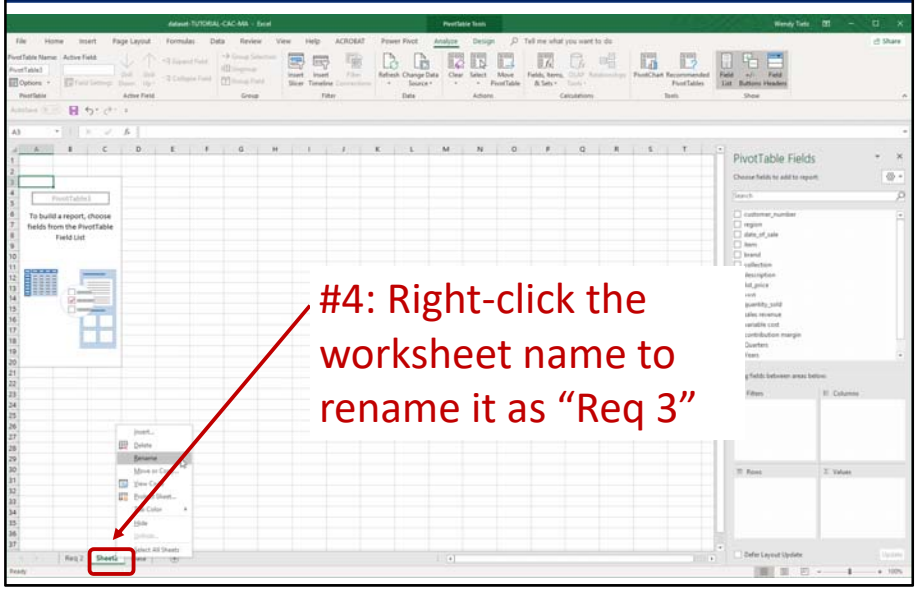
Click on the Insert tab and then click on Pivot Table.

Req 3: Sales, variable cost and CM by year



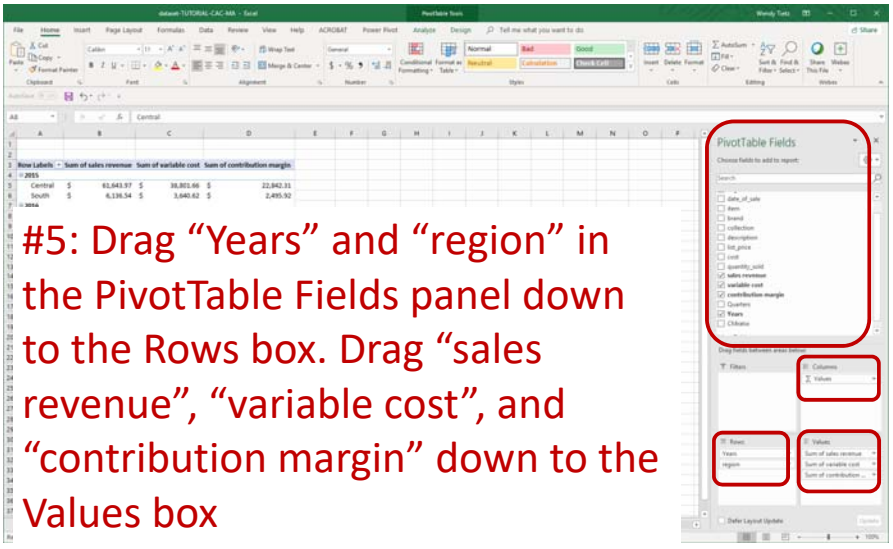
Next, accept the defaults and click on OK.

Req 3: Sales, variable cost and CM by year

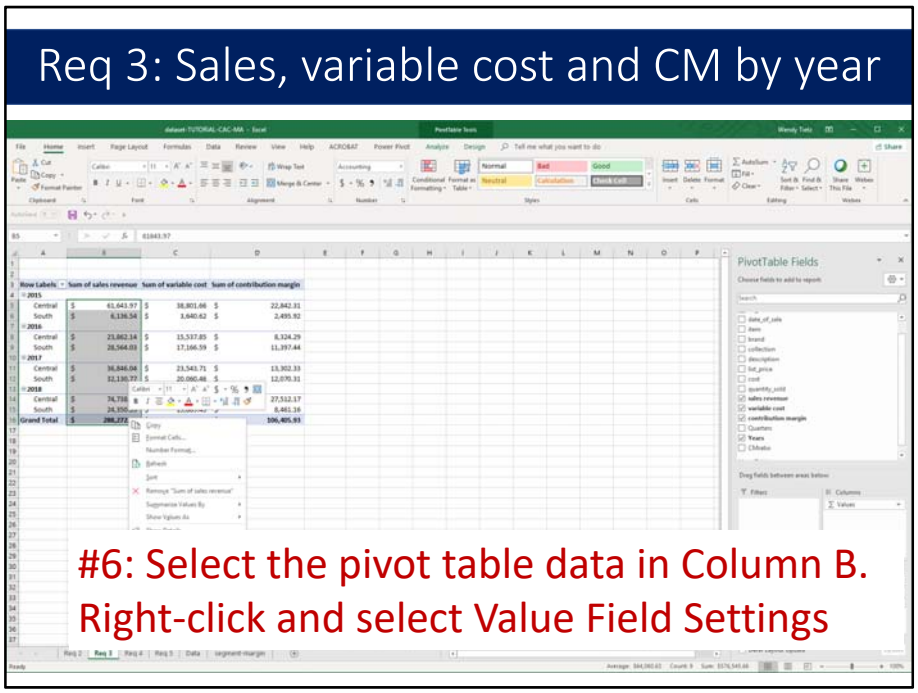


Before we go any further, right-click the worksheet name tab and rename it “Req 3.” That will just help to keep track of the various pivot tables.

Req 3: Sales, variable cost and CM by year

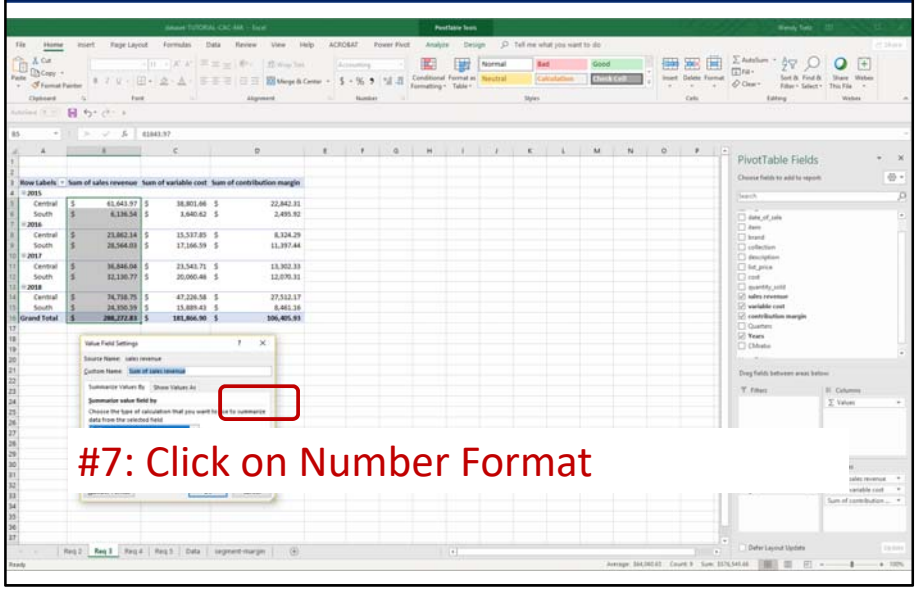


In the next step, drag “Years” in the PivotTable Fields panel down to the Rows box. Drag “sales revenue”, “variable cost”, and “contribution margin” down to the Values box.

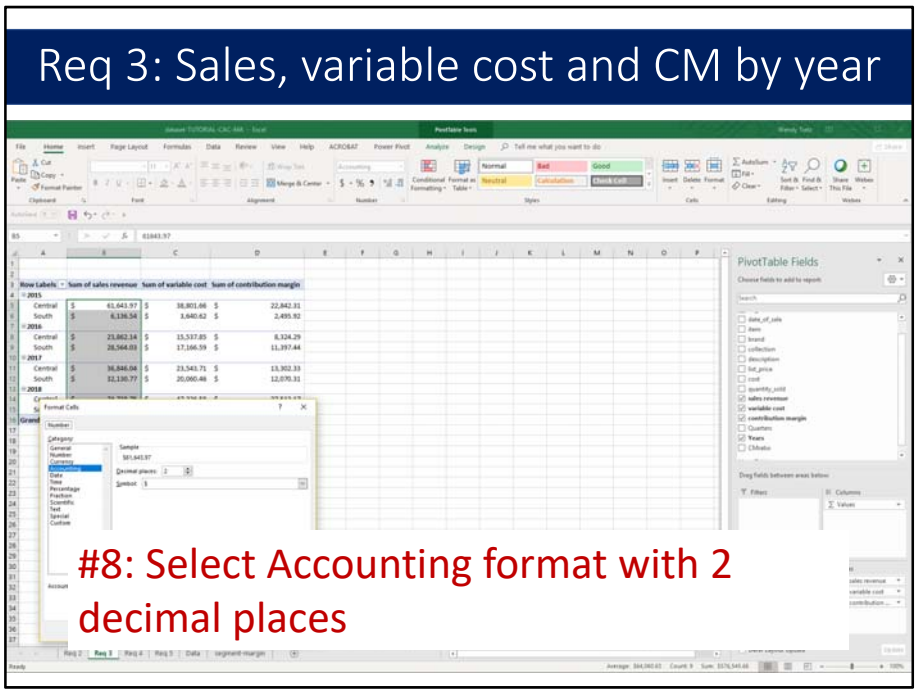


Next, select the pivot table data in Column B for sales revenue. Right-click and select Value Field Settings.

Req 3: Sales, variable cost and CM by year

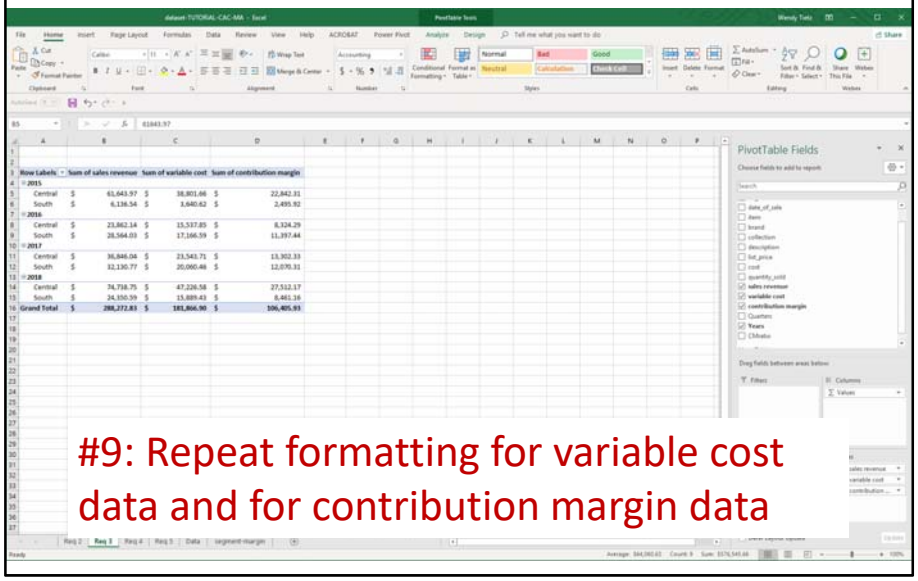


Next, click on Number Format.



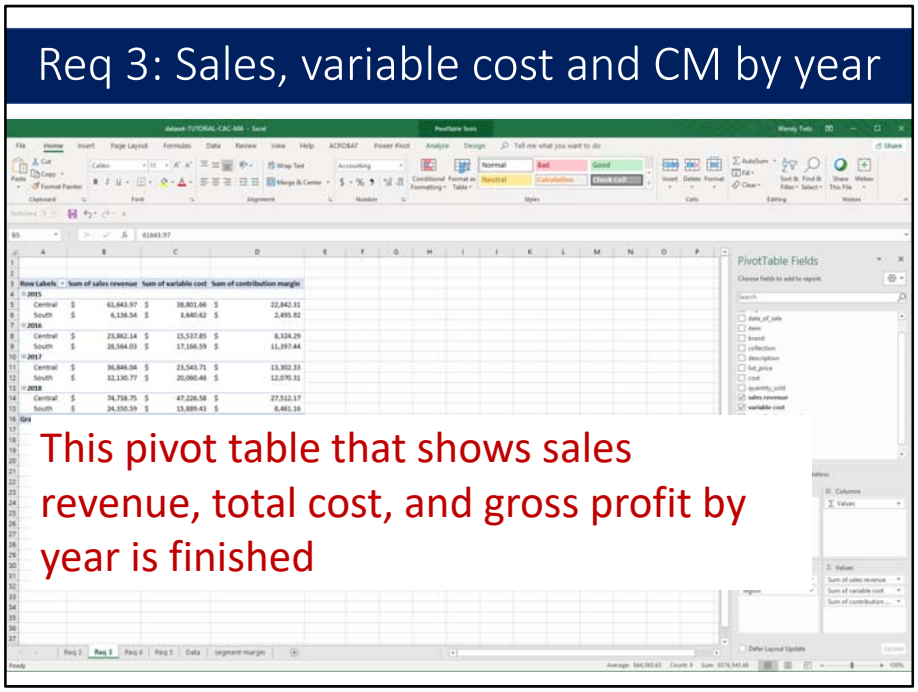
Select Accounting format with 2 decimal places.

Req 3: Sales, variable cost and CM by year



Now repeat the formatting step for both the variable cost data and for the contribution margin data.

Req 3: Sales, variable cost and CM by year



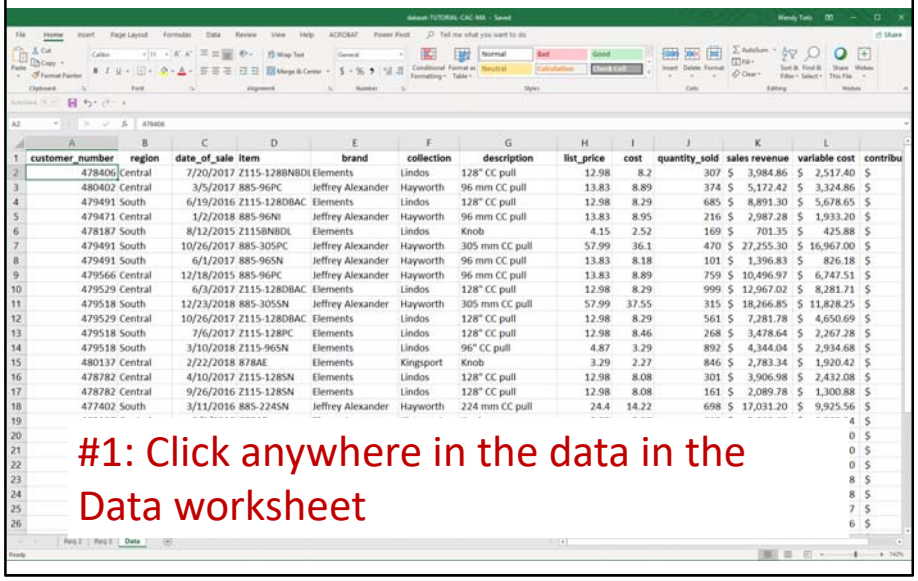
This pivot table that shows sales revenue, variable cost, and contribution margin by year is now finished.

Requirement 4

Create a pivot table that shows the most profitable brand in each year, as measured by contribution margin.

Requirement 4 reads “Create a pivot table that shows the most profitable brand in each year, as measured by gross profit.”

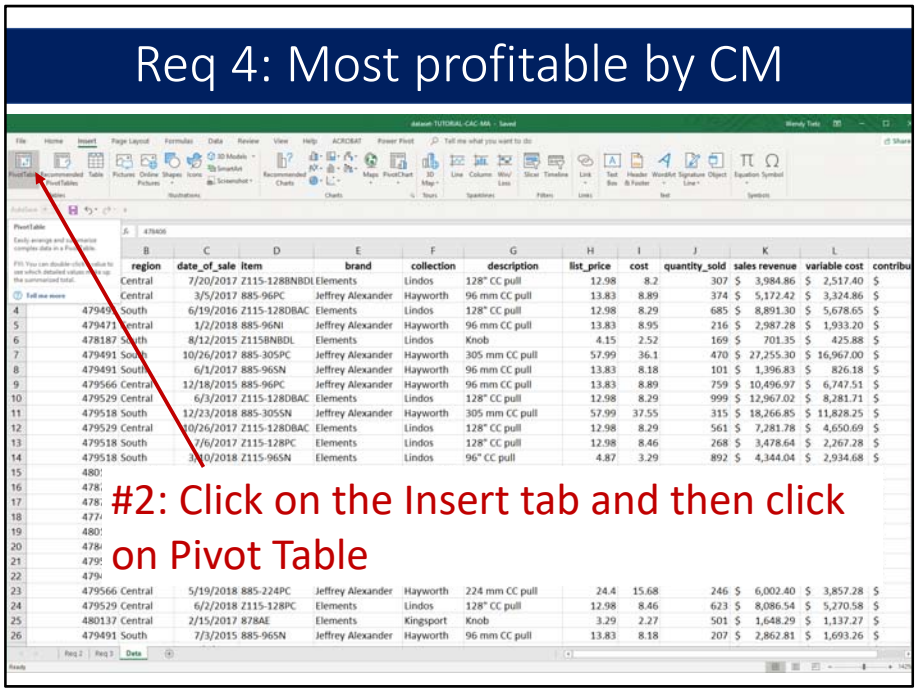
Req 4: Most profitable by CM



customer_number	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribu
478406	Central	7/20/2017	Z115-128BNBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	$ 3,984.86	$ 2,517.40	$
480402	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374	$ 5,172.42	$ 3,324.86	$
479491	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685	$ 8,891.30	$ 5,678.65	$
479471	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216	$ 2,987.28	$ 1,933.20	$
478187	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169	$ 701.35	$ 425.88	$
479491	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470	$ 27,255.30	$ 16,967.00	$
479491	South	6/1/2017	885-965N	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101	$ 1,396.83	$ 826.18	$
479566	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759	$ 10,496.97	$ 6,747.51	$
479529	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999	$ 12,967.02	$ 8,281.71	$
479518	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315	$ 18,266.85	$ 11,828.25	$
479529	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561	$ 7,281.78	$ 4,650.69	$
479518	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268	$ 3,478.64	$ 2,267.28	$
479518	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892	$ 4,344.04	$ 2,934.68	$
480137	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846	$ 2,783.34	$ 1,920.42	$
478782	Central	4/10/2017	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	301	$ 3,906.98	$ 2,432.08	$
478782	Central	9/26/2016	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	161	$ 2,089.78	$ 1,300.88	$
477402	South	3/11/2016	885-224SN	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	14.22	698	$ 17,031.20	$ 9,925.56	$

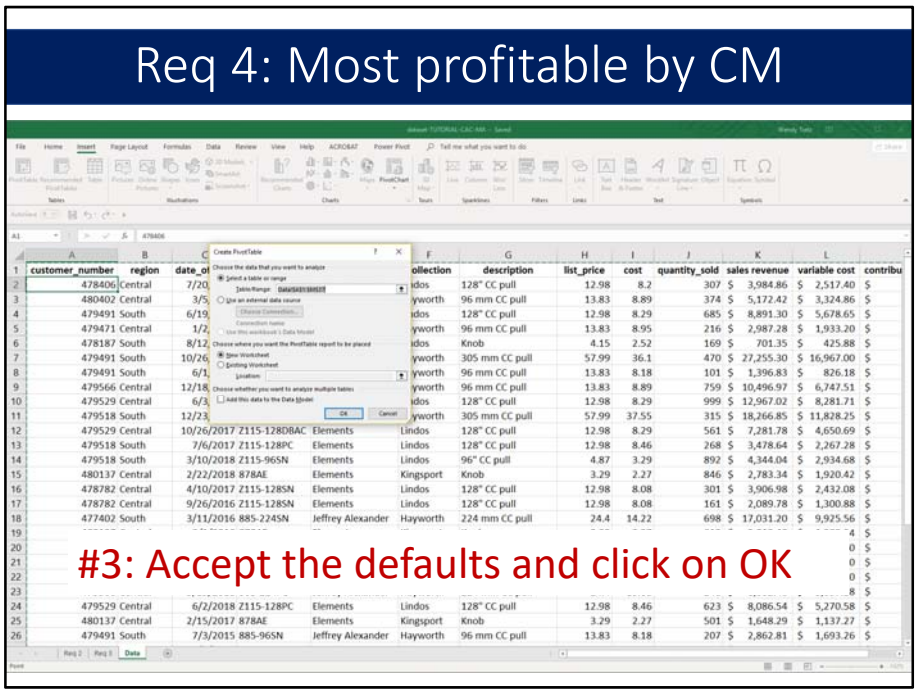
The first step is to click anywhere in the data in the Data worksheet.

Req 4: Most profitable by CM



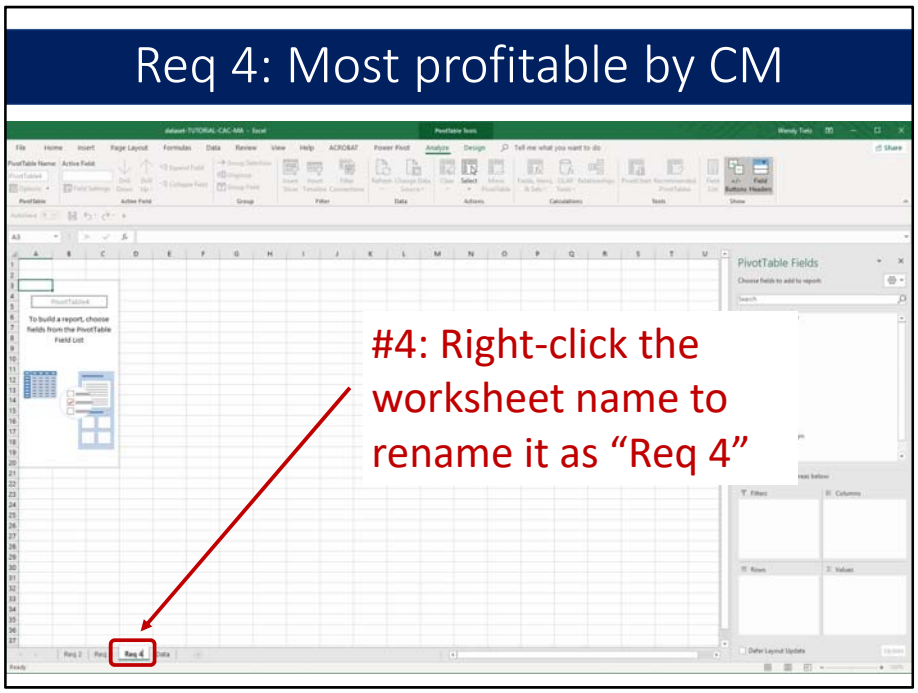
Click on the Insert tab and then click on Pivot Table.

Req 4: Most profitable by CM

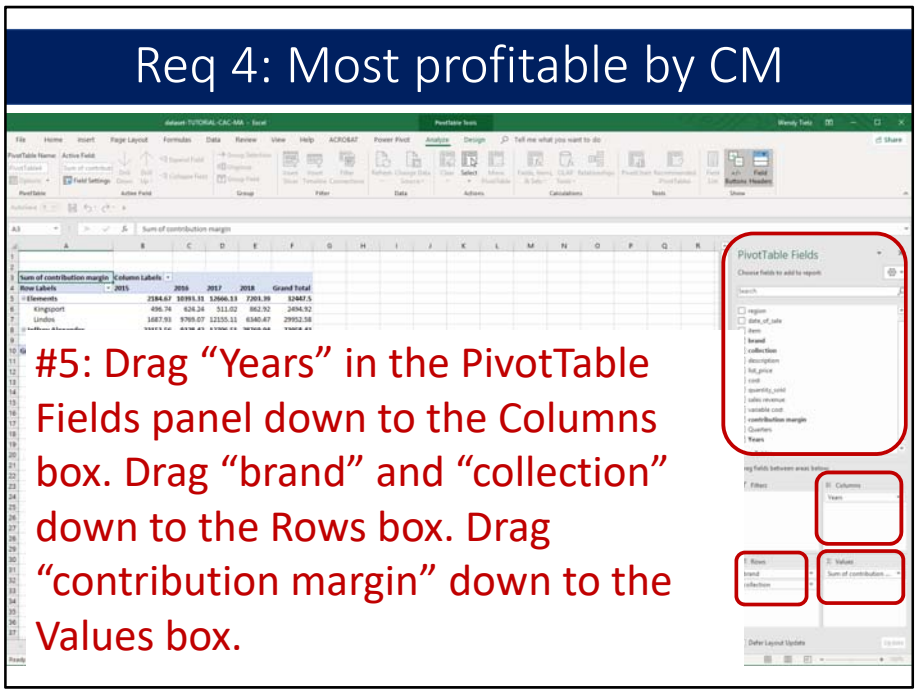


Accept the defaults and click on OK.

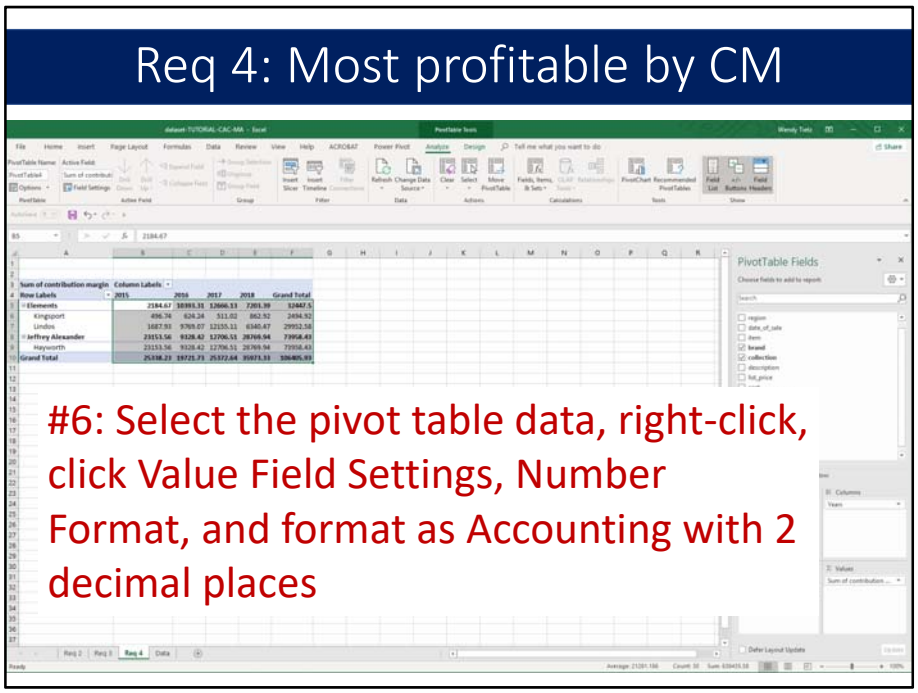
Req 4: Most profitable by CM



Before we go any further, right-click the worksheet name tab and rename it “Req 4.” That will help to keep track of the pivot tables.

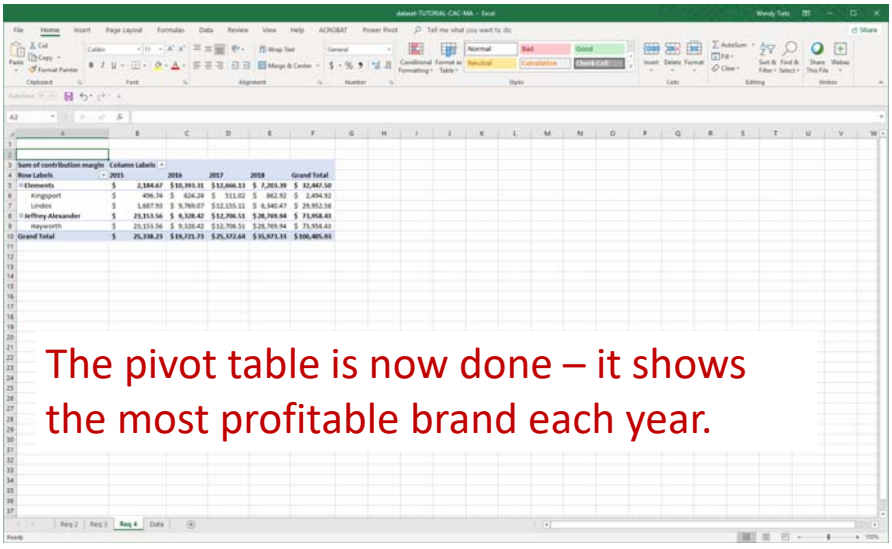


In the next step, drag “Years” in the PivotTable Fields panel down to the Columns box. Drag “brand” and “collection” down to the Rows box. Drag “contribution margin” down to the Values box.



Next, select the pivot table data, right-click, click Value Field Settings, Number Format, and format as Accounting with 2 decimal places. Remember that you may have to format the data in each column separately.

Req 4: Most profitable by CM



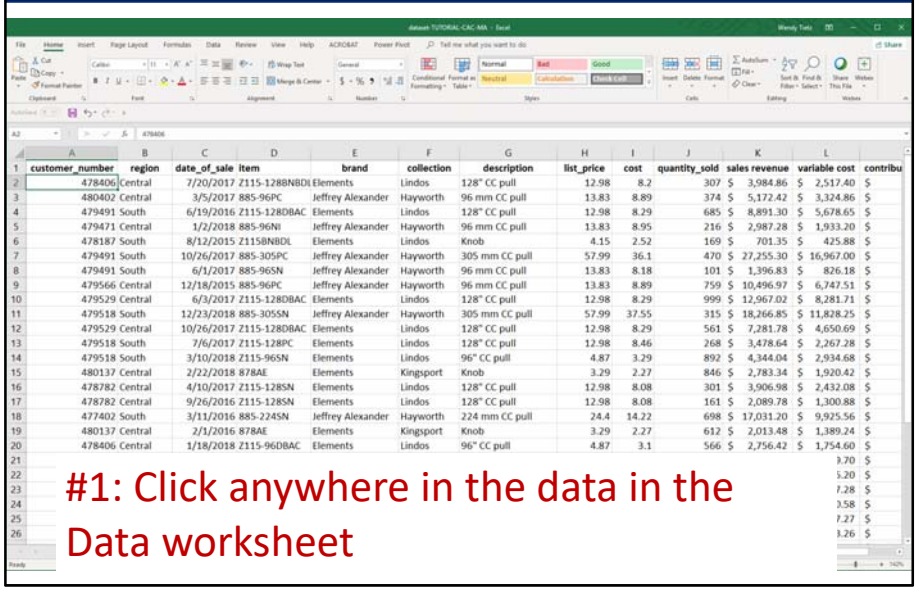
The pivot table is now done – it shows the most profitable brand each year.

Requirement 5

Create a pivot table to answer the question “Within each brand, what was the most profitable brand in 2018, as measured by contribution margin ratio?”

Requirement 5 reads ““Within each brand, what was the most profitable brand in 2018, as measured by contribution margin ratio?” Use the field “years” to filter the data to include just the year of 2018. You will need to add a calculated field to the pivot table to calculate the contribution margin ratio. Within each brand, sort the collections by gross profit percentage, from the largest to the smallest.

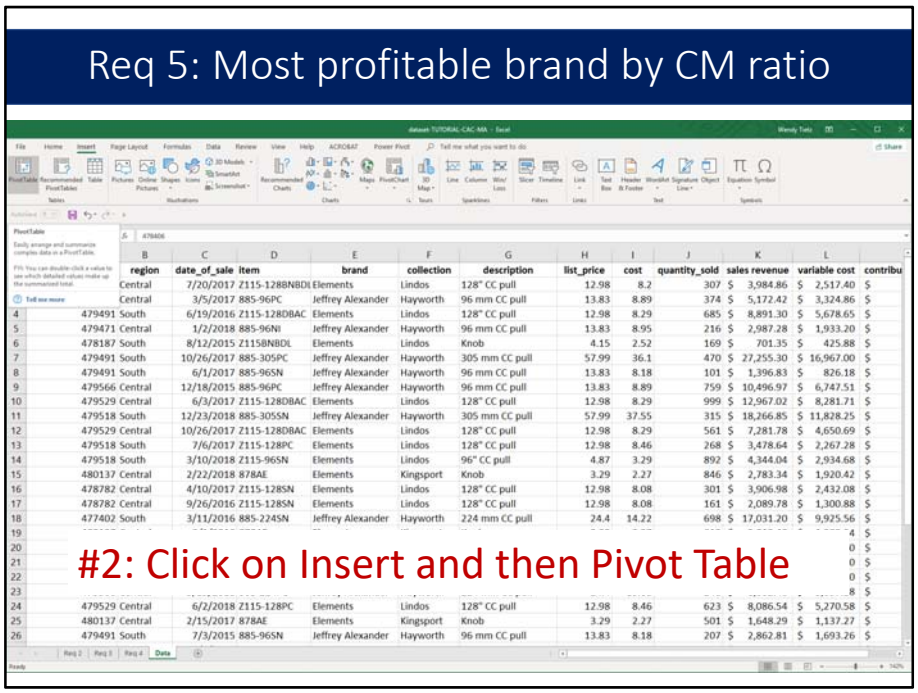
Req 5: Most profitable brand by CM ratio



customer_number	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribu
478406	Central	7/20/2017	Z115-128BNBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	$ 3,984.86	$ 2,517.40	$
480402	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374	$ 5,172.42	$ 3,324.86	$
479491	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685	$ 8,891.30	$ 5,678.65	$
479471	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216	$ 2,987.28	$ 1,933.20	$
478187	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169	$ 701.35	$ 425.88	$
479491	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470	$ 27,255.30	$ 16,967.00	$
479491	South	6/1/2017	885-965N	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101	$ 1,396.83	$ 826.18	$
479566	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759	$ 10,496.97	$ 6,747.51	$
479529	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999	$ 12,967.02	$ 8,281.71	$
479518	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315	$ 18,266.85	$ 11,828.25	$
479529	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561	$ 7,281.78	$ 4,650.69	$
479518	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268	$ 3,478.64	$ 2,267.28	$
479518	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892	$ 4,344.04	$ 2,934.68	$
480137	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846	$ 2,783.34	$ 1,920.42	$
478782	Central	4/10/2017	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	301	$ 3,906.98	$ 2,432.08	$
478782	Central	9/26/2016	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	161	$ 2,089.78	$ 1,300.88	$
477402	South	3/11/2016	885-224SN	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	14.22	698	$ 17,031.20	$ 9,925.56	$
480137	Central	2/1/2016	878AE	Elements	Kingsport	Knob	3.29	2.27	612	$ 2,013.48	$ 1,389.24	$
478406	Central	1/18/2018	Z115-96DBAC	Elements	Lindos	96" CC pull	4.87	3.1	566	$ 2,756.42	$ 1,754.60	$

The first step is to click anywhere in the data in the Data worksheet.

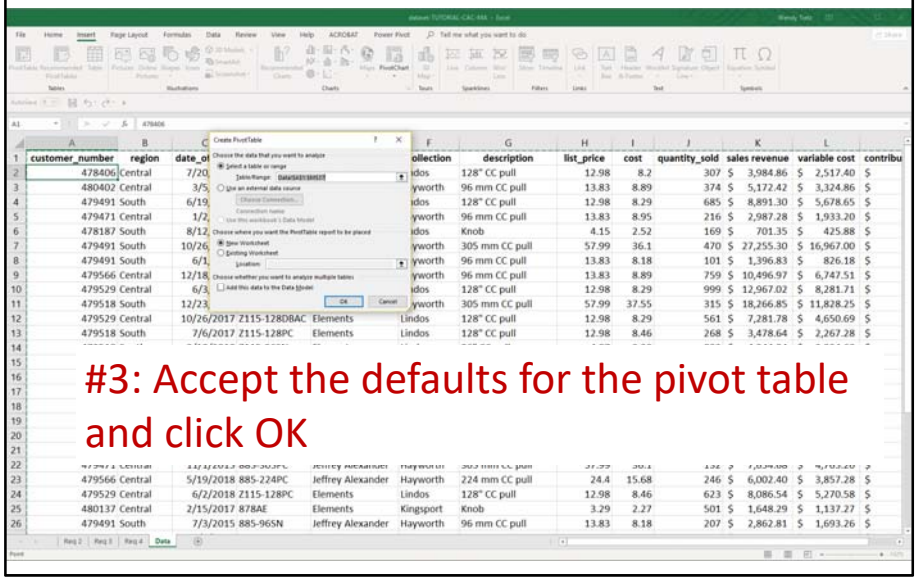
Req 5: Most profitable brand by CM ratio



	region	date_of_sale	item	brand	collection	description	list_price	cost	quantity_sold	sales revenue	variable cost	contribu
	Central	7/20/2017	Z115-128BNBDL	Elements	Lindos	128" CC pull	12.98	8.2	307	$ 3,984.86	$ 2,517.40	$
	Central	3/5/2017	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	374	$ 5,172.42	$ 3,324.86	$
479491	South	6/19/2016	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	685	$ 8,891.30	$ 5,678.65	$
479471	Central	1/2/2018	885-96NI	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.95	216	$ 2,987.28	$ 1,933.20	$
478187	South	8/12/2015	Z115BNBDL	Elements	Lindos	Knob	4.15	2.52	169	$ 701.35	$ 425.88	$
479491	South	10/26/2017	885-305PC	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	36.1	470	$ 27,255.30	$ 16,967.00	$
479491	South	6/1/2017	885-965N	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	101	$ 1,396.83	$ 826.18	$
479566	Central	12/18/2015	885-96PC	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.89	759	$ 10,496.97	$ 6,747.51	$
479529	Central	6/3/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	999	$ 12,967.02	$ 8,281.71	$
479518	South	12/23/2018	885-305SN	Jeffrey Alexander	Hayworth	305 mm CC pull	57.99	37.55	315	$ 18,266.85	$ 11,828.25	$
479529	Central	10/26/2017	Z115-128DBAC	Elements	Lindos	128" CC pull	12.98	8.29	561	$ 7,281.78	$ 4,650.69	$
479518	South	7/6/2017	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	268	$ 3,478.64	$ 2,267.28	$
479518	South	3/10/2018	Z115-96SN	Elements	Lindos	96" CC pull	4.87	3.29	892	$ 4,344.04	$ 2,934.68	$
480137	Central	2/22/2018	878AE	Elements	Kingsport	Knob	3.29	2.27	846	$ 2,783.34	$ 1,920.42	$
478782	Central	4/10/2017	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	301	$ 3,906.98	$ 2,432.08	$
478782	Central	9/26/2016	Z115-128SN	Elements	Lindos	128" CC pull	12.98	8.08	161	$ 2,089.78	$ 1,300.88	$
477402	South	3/11/2016	885-224SN	Jeffrey Alexander	Hayworth	224 mm CC pull	24.4	14.22	698	$ 17,031.20	$ 9,925.56	$
											4	$
											0	$
											0	$
											0	$
											8	$
479529	Central	6/2/2018	Z115-128PC	Elements	Lindos	128" CC pull	12.98	8.46	623	$ 8,086.54	$ 5,270.58	$
480137	Central	2/15/2017	878AE	Elements	Kingsport	Knob	3.29	2.27	501	$ 1,648.29	$ 1,137.27	$
479491	South	7/3/2015	885-965N	Jeffrey Alexander	Hayworth	96 mm CC pull	13.83	8.18	207	$ 2,862.81	$ 1,693.26	$

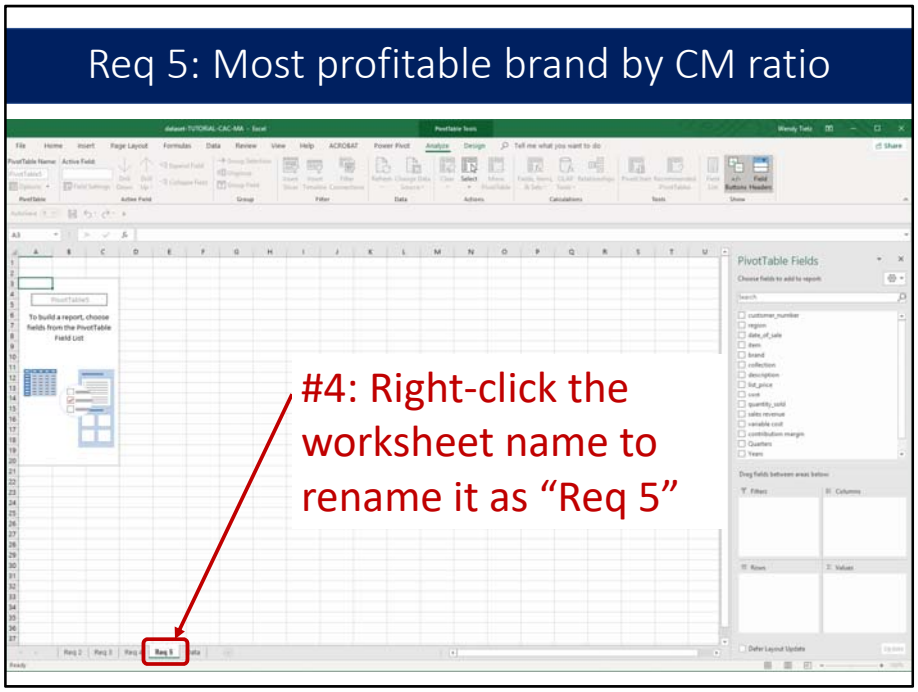
Next, click on Insert and then Pivot Table.

Req 5: Most profitable brand by CM ratio

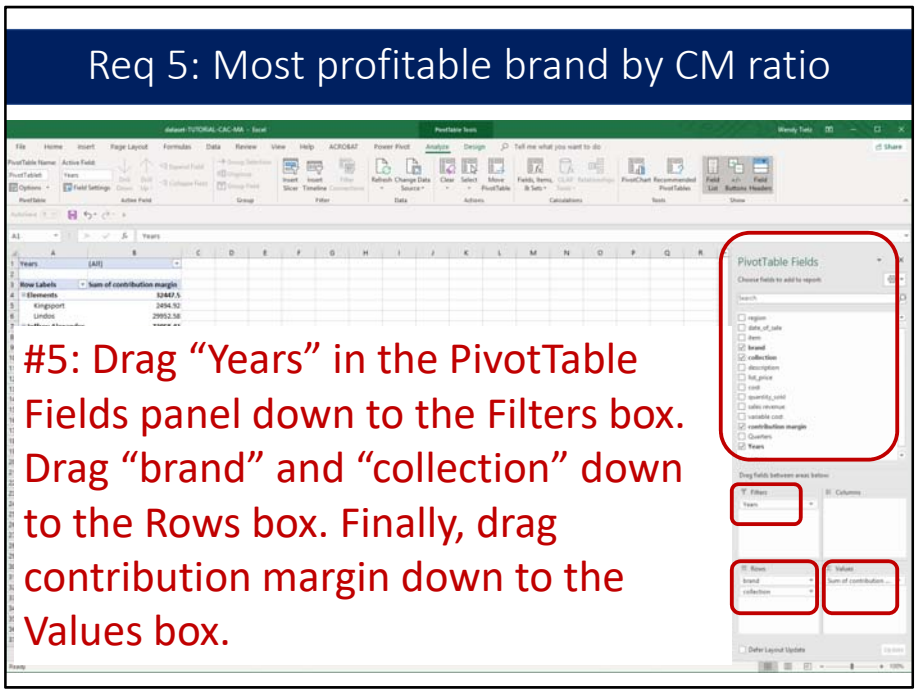


Next, accept the defaults for the pivot table and click OK.

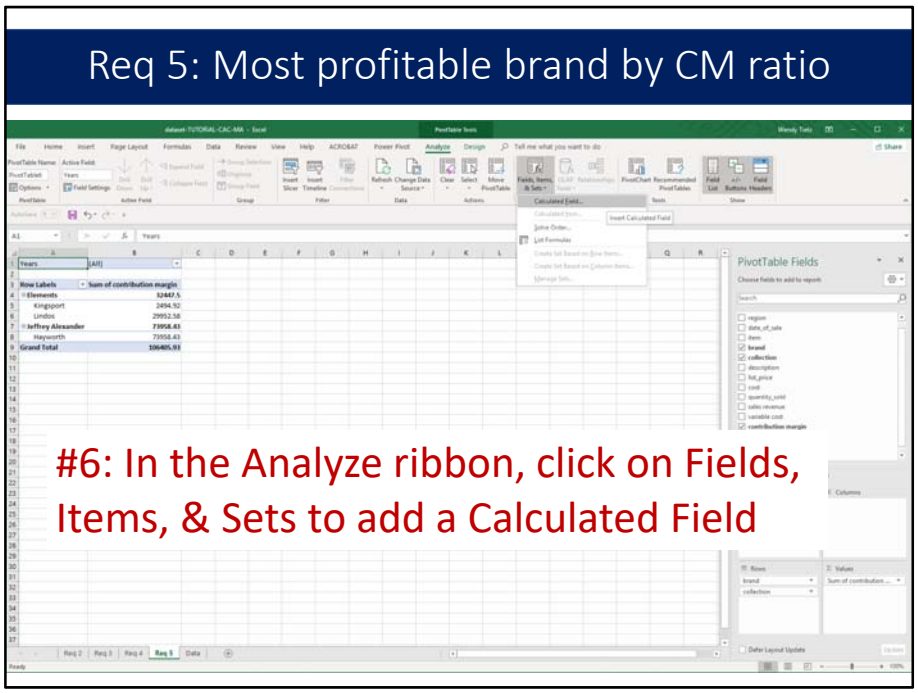
Req 5: Most profitable brand by CM ratio



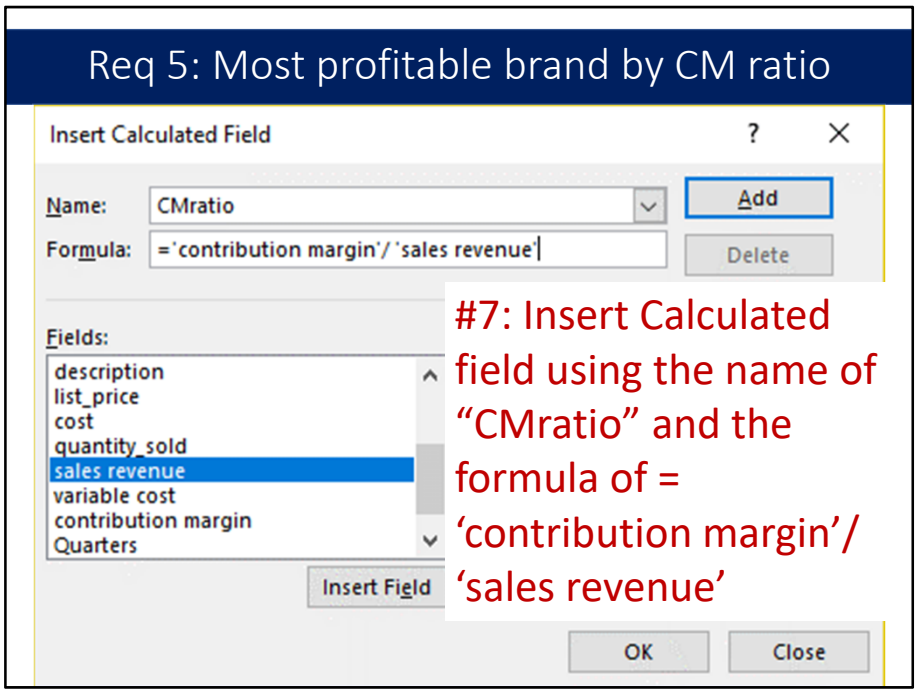
Before we go any further, right-click the worksheet name tab and rename it “Req 5.” Numbering the worksheets helps to keep track of the pivot tables.



Next, drag “Years” in the PivotTable Fields panel down to the Filters box. Drag “brand” and “collection” down to the Rows box. Finally, drag contribution margin down to the Values box.

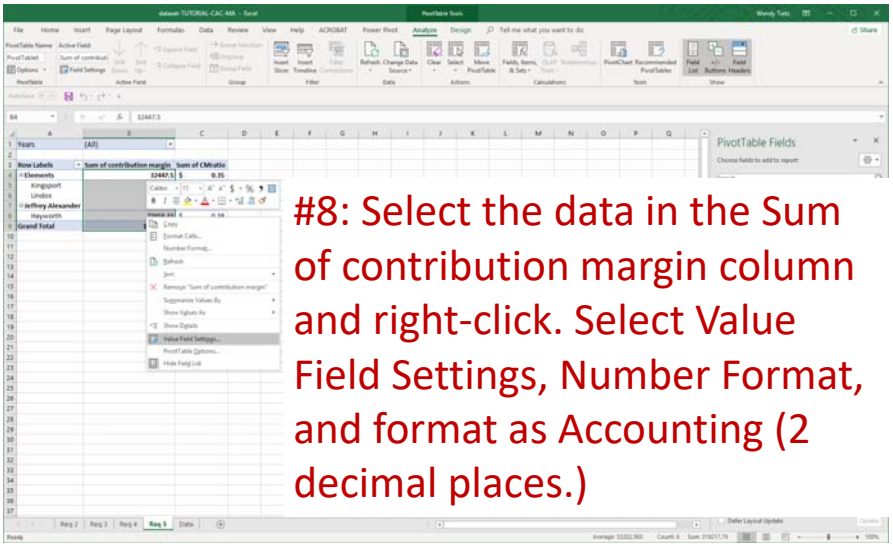


Next, in the Analyze ribbon, click on Fields, Items, & Sets to add a Calculated Field.



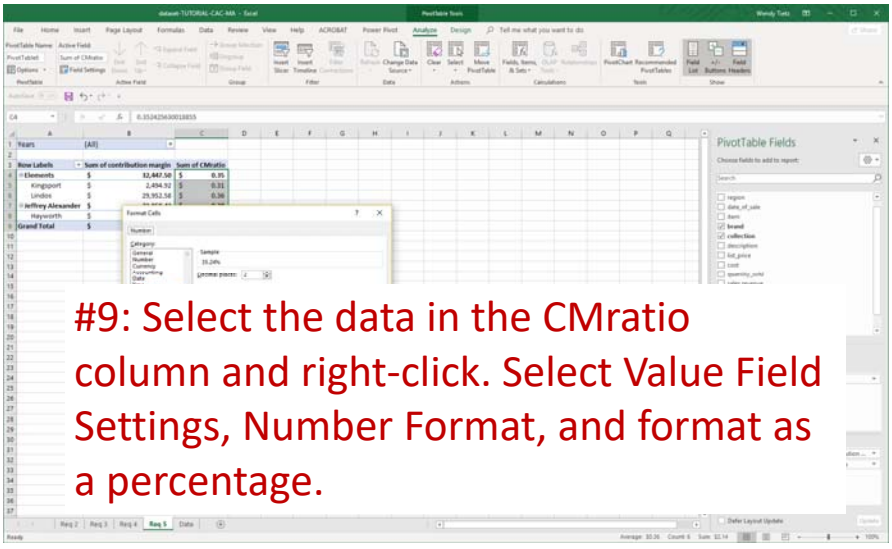
For the next step, insert Calculated field using the name of "CMratio" and the formula of = 'contribution margin'/ 'sales revenue'. Point to the fields and click insert rather than typing them in.

Req 5: Most profitable brand by CM ratio

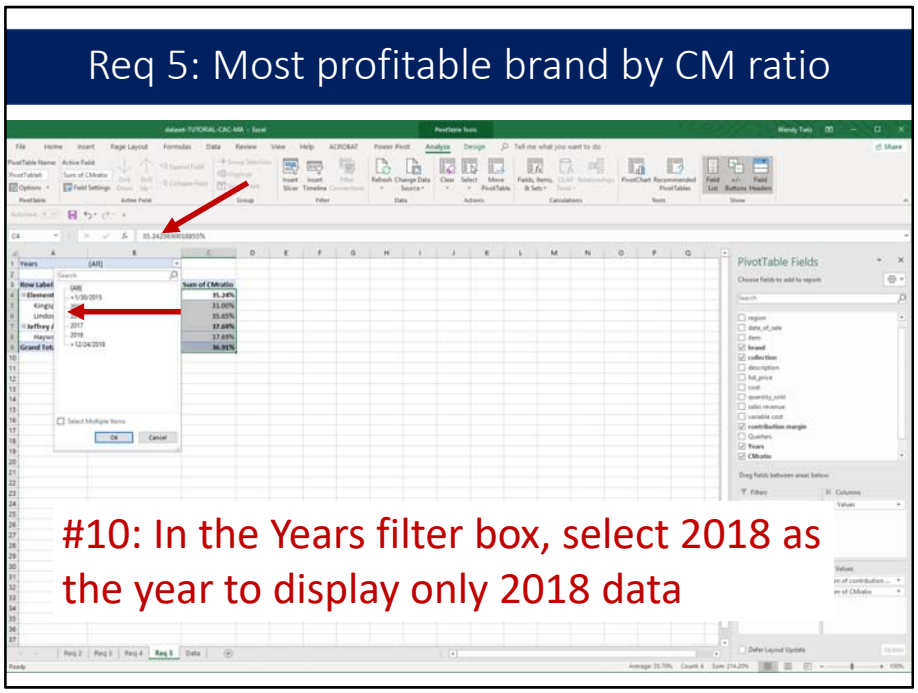


Next, select the data in the sum of contribution margin column and right-click. Select Value Field Settings, Number Format, and format as a percentage.

Req 5: Most profitable brand by CM ratio

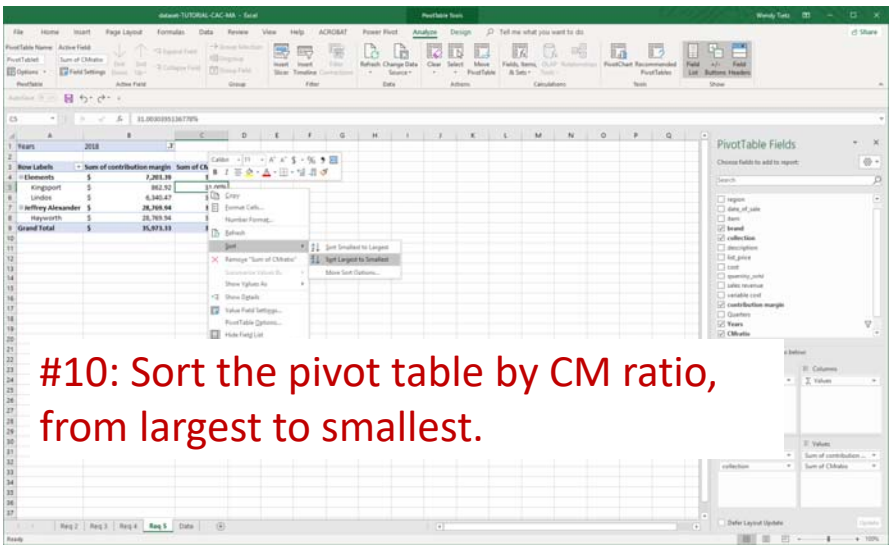


Next, select the data in the CMratio column and right-click. Select Value Field Settings, Number Format, and format as a percentage.



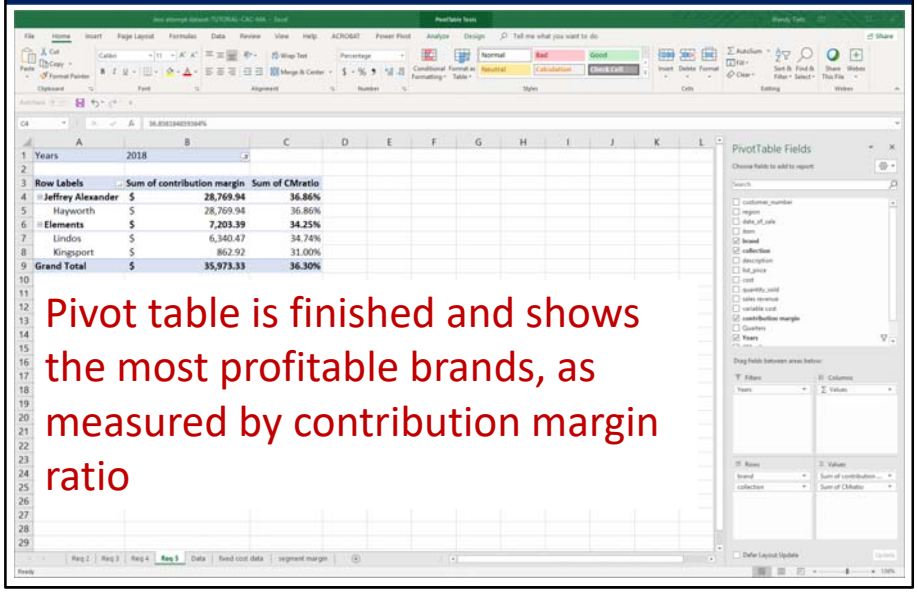
In the next step, in the Years filter box, select 2018 as the year to display only 2018 data.

Req 5: Most profitable brand by CM ratio



Click on a cell in the pivot table at the collection level. Here we will click on Cell C5. Next, right-click and select Sort, and then Sort Largest to Smallest.

Req 5: Most profitable brand by CM ratio

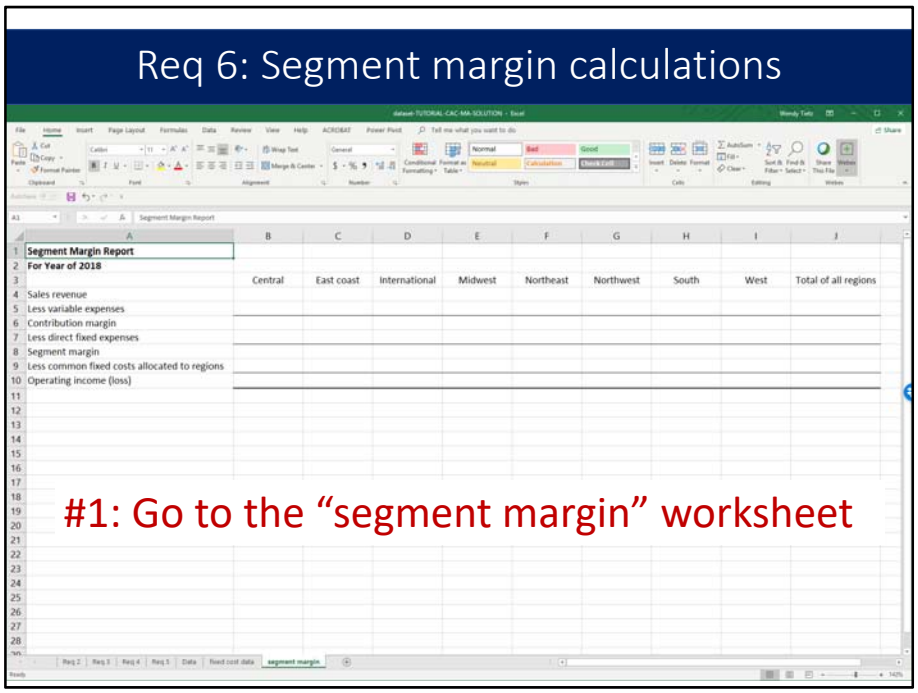


The pivot table is finished. We can see the most profitable and least profitable brands as measured by contribution margin ratio.

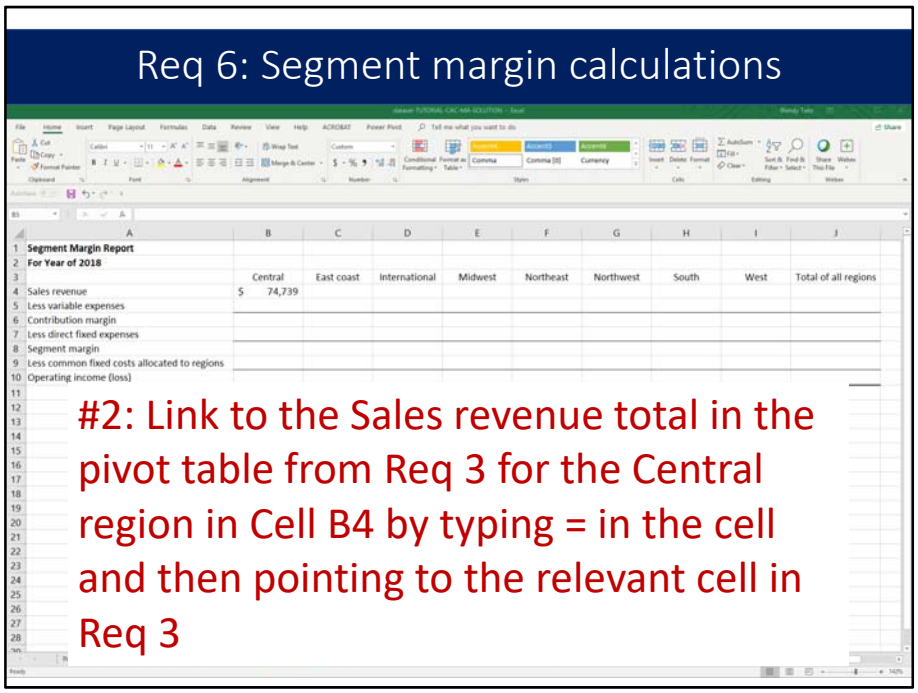
Requirement 6

Complete the worksheet named "segment margin" to calculate each region's segment margin and operating income for 2018.

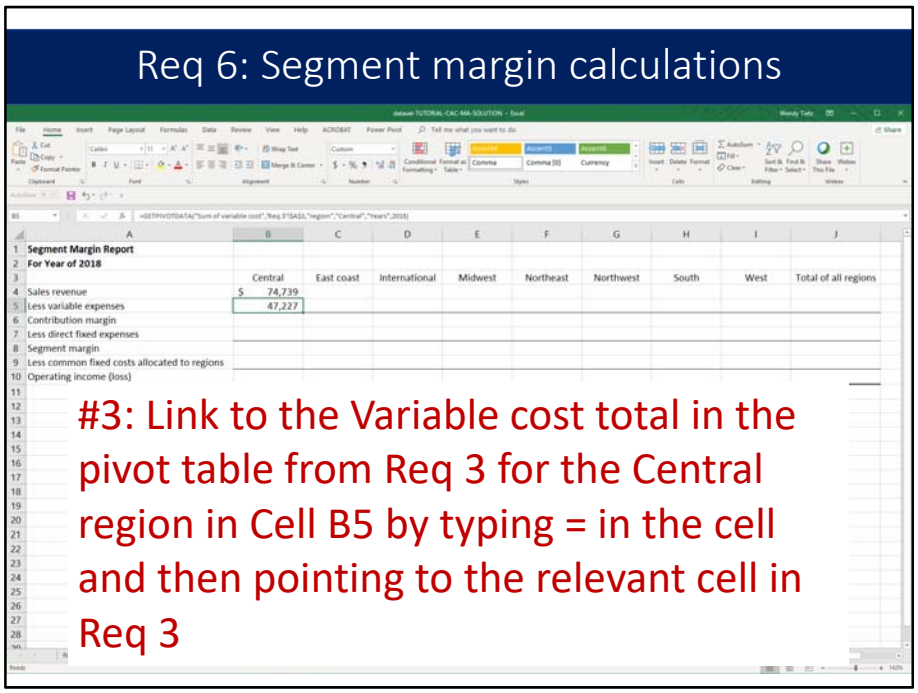
Requirement 6 reads "Complete the worksheet named "segment margin." You will calculate each region's segment margin and operating income for 2018." You will link to the totals in the pivot table you created for Requirement 3. You will get the fixed costs for calculating the segment margins from the "fixed cost data" worksheet.



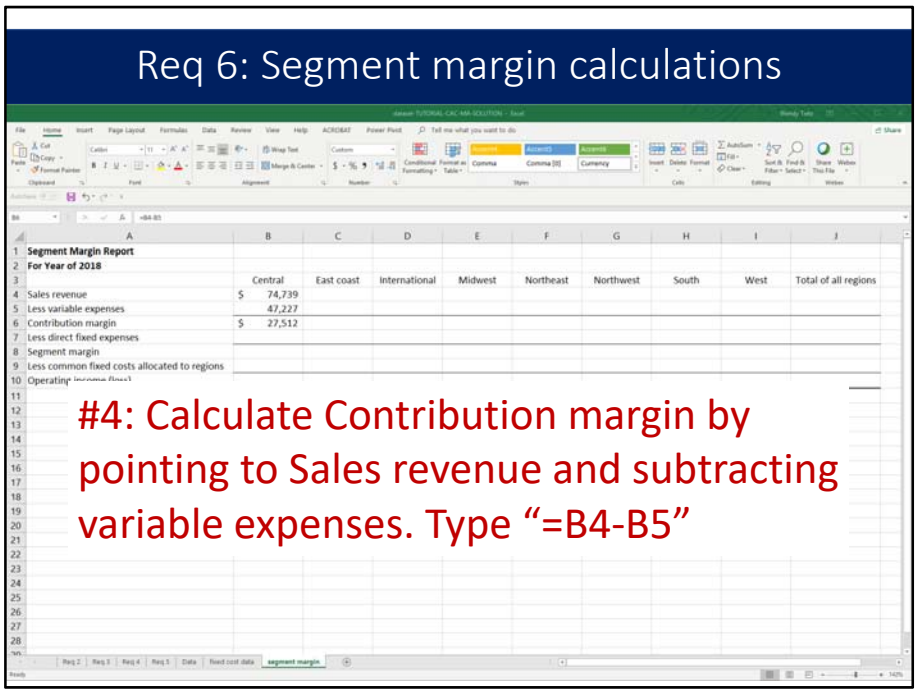
Go to the “segment margin” worksheet.



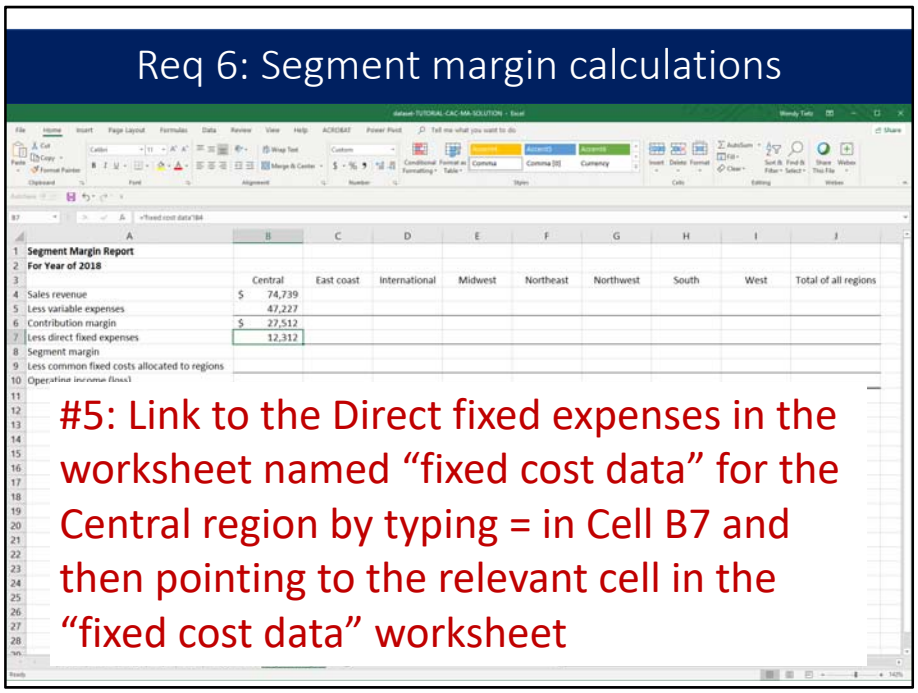
Next, link to the Sales revenue total in the pivot table from Requirement 3 for the Central region in Cell B4 by typing an equals sign in the cell and then pointing to the relevant cell in Requirement 3.



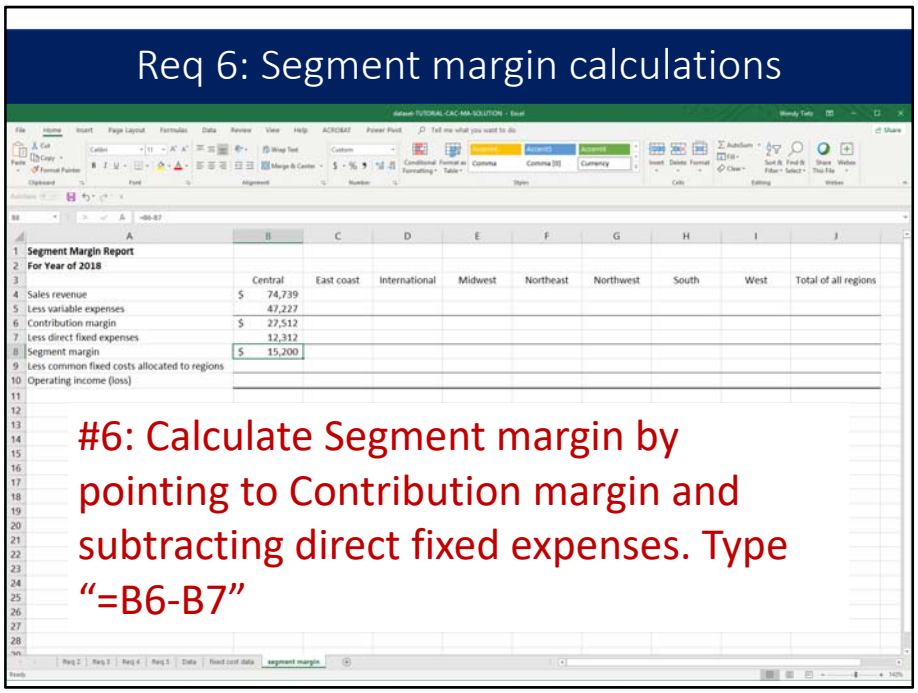
Next, link to the Variable cost total in the pivot table from Requirement 3 for the Central region in Cell B5 by typing an equals sign in the cell and then pointing to the relevant cell in Requirement 3.



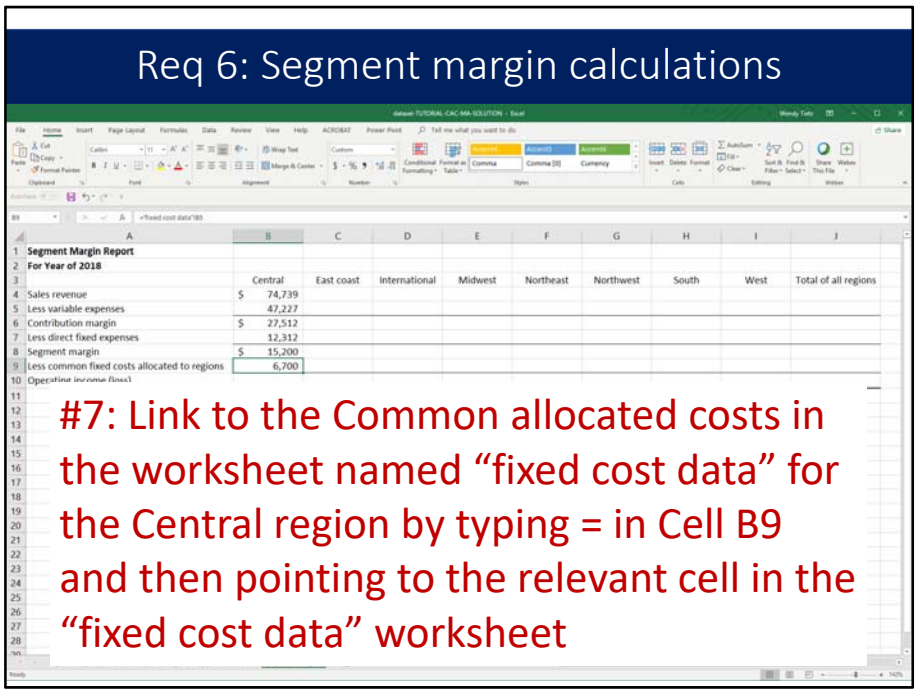
Next, calculate Contribution margin by pointing to Sales revenue and subtracting variable expenses. Type equals sign B4 minus B5.



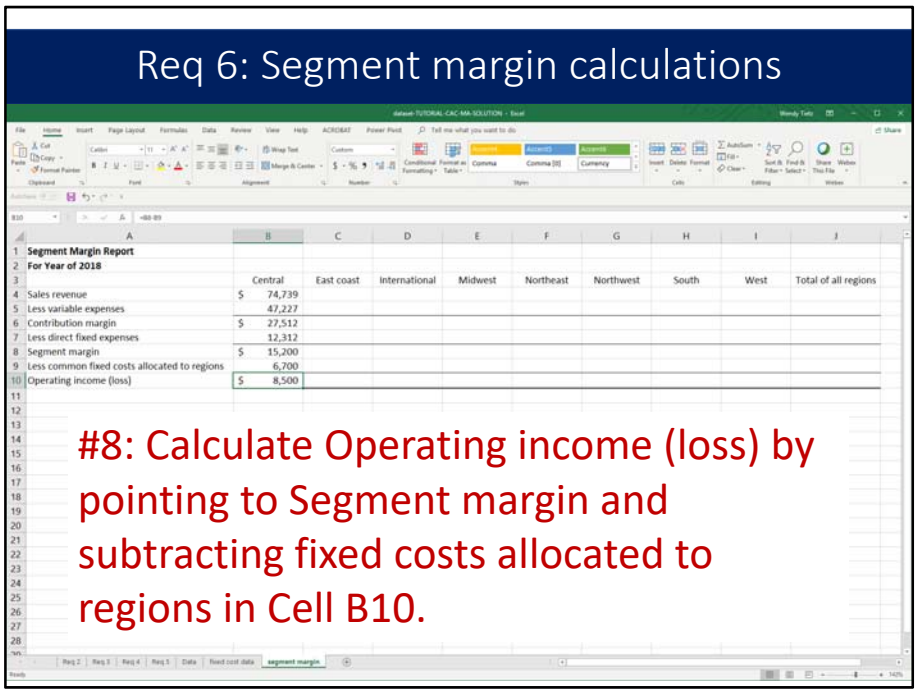
Now let’s link to the Direct fixed expenses in the worksheet named “fixed cost data” for the Central region by typing an equals sign in Cell B7 and then pointing to the relevant cell in the “fixed cost data” worksheet.



Now calculate the Segment margin by pointing to Contribution margin and subtracting direct fixed expenses. Type equals sign B6 minus B7.

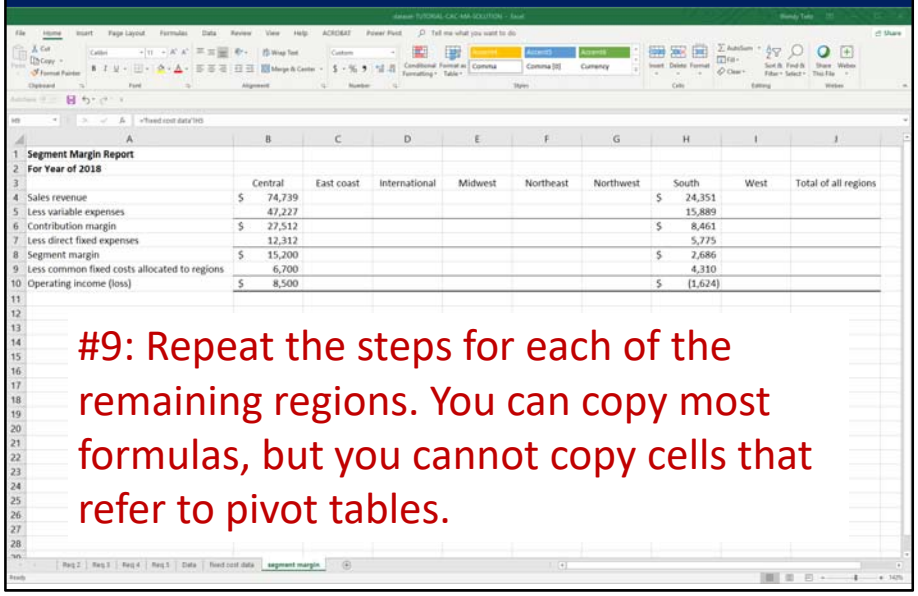


Now link to the Common allocated costs in the worksheet named “fixed cost data” for the Central region by typing an equals sign in Cell B9 and then pointing to the relevant cell in the “fixed cost data” worksheet.



Calculate Operating income (or loss) by pointing to Segment margin and subtracting fixed costs allocated to regions in Cell B10.

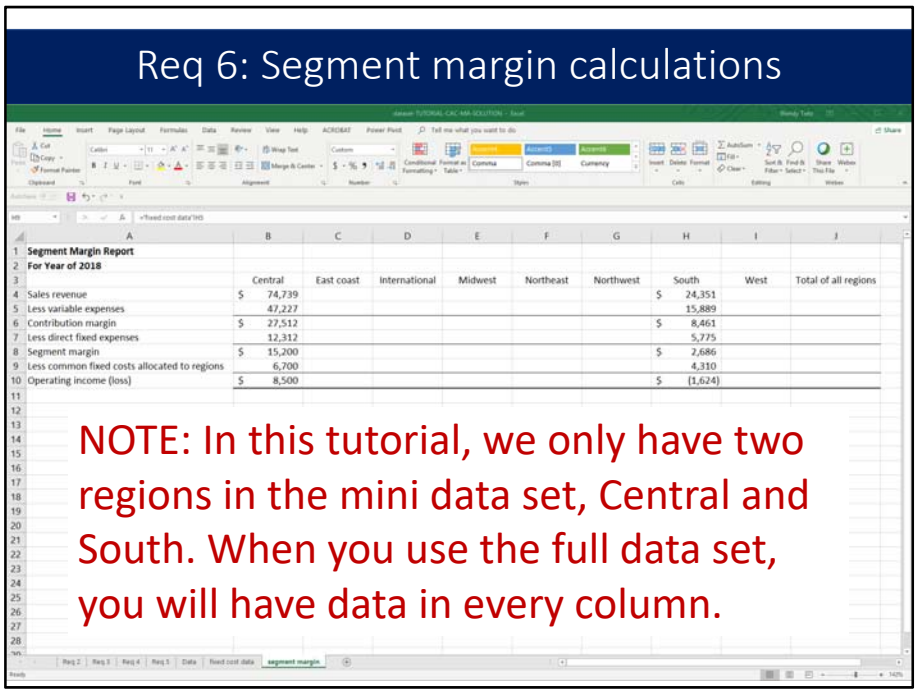
Req 6: Segment margin calculations



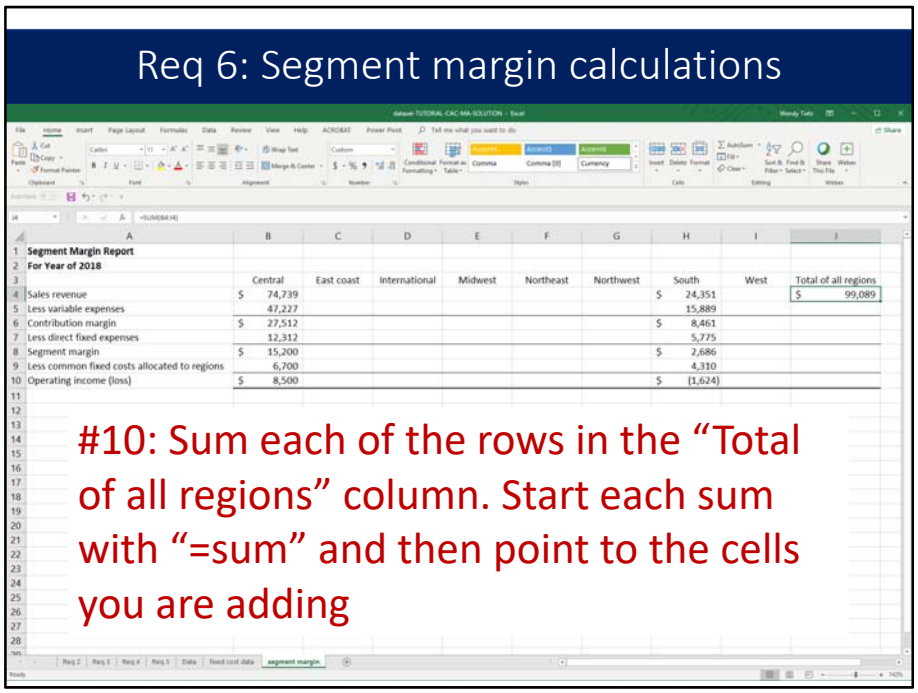
	A	B	C	D	E	F	G	H	I	J
1	**Segment Margin Report**									
2	**For Year of 2018**									
3		Central	East coast	International	Midwest	Northeast	Northwest	South	West	Total of all regions
4	Sales revenue	$ 74,739						$ 24,351		
5	Less variable expenses	47,227						15,889		
6	Contribution margin	$ 27,512						$ 8,461		
7	Less direct fixed expenses	12,312						5,775		
8	Segment margin	$ 15,200						$ 2,686		
9	Less common fixed costs allocated to regions	6,700						4,310		
10	Operating income (loss)	$ 8,500						$ (1,624)		

#9: Repeat the steps for each of the remaining regions. You can copy most formulas, but you cannot copy cells that refer to pivot tables.

Repeat the previous steps for each of the remaining regions. You can copy most formulas, but remember that you cannot copy cells that refer to pivot tables. Any cells that point to the numbers in the pivot table in Requirement 3 will need to each be linked individually rather than copied from another cell in the worksheet.

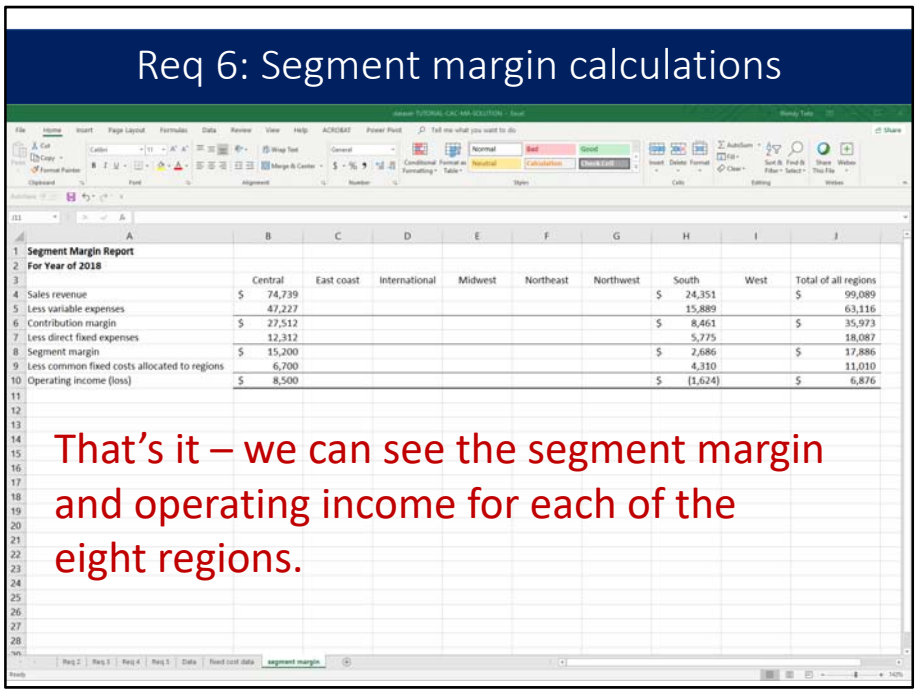


In this tutorial, we only have two regions in the mini data set, Central and South. When you use the full data set, you will have data in every column. There are eight regions in the full data set.



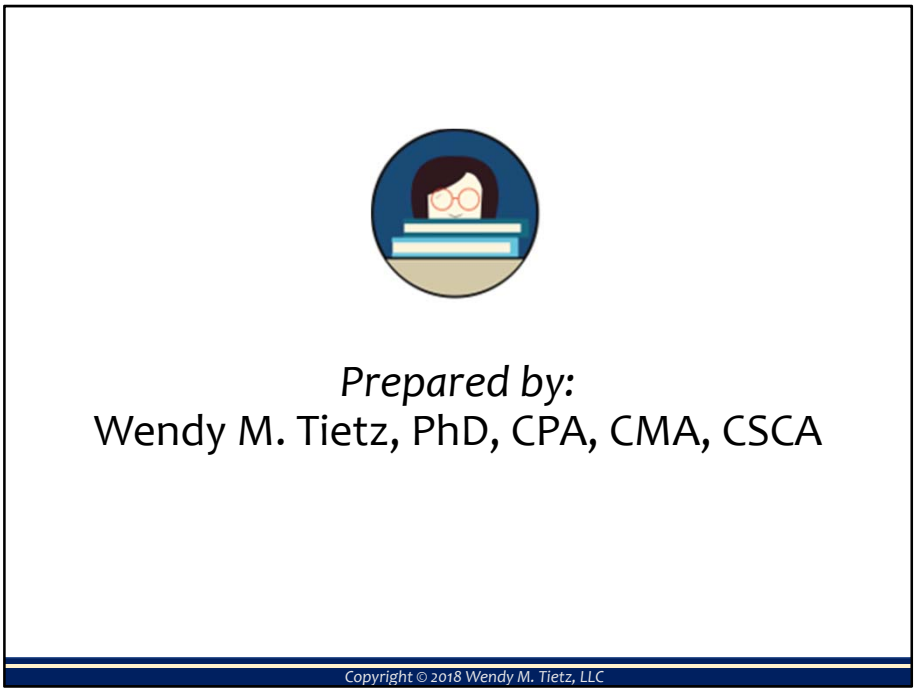
	A	B	C	D	E	F	G	H	I	J
1	**Segment Margin Report**									
2	**For Year of 2018**									
3		Central	East coast	International	Midwest	Northeast	Northwest	South	West	Total of all regions
4	Sales revenue	$ 74,739						$ 24,351		$ 99,089
5	Less variable expenses	47,227						15,889		
6	Contribution margin	$ 27,512						$ 8,461		
7	Less direct fixed expenses	12,312						5,775		
8	Segment margin	$ 15,200						$ 2,686		
9	Less common fixed costs allocated to regions	6,700						4,310		
10	Operating income (loss)	$ 8,500						$ (1,624)		

Now sum each of the rows in the “Total of all regions” column. Start each sum with an equal sign SUM and then point to the cells you are adding.



	A	B	C	D	E	F	G	H	I	J
1	**Segment Margin Report**									
2	**For Year of 2018**									
3		Central	East coast	International	Midwest	Northeast	Northwest	South	West	Total of all regions
4	Sales revenue	$ 74,739						$ 24,351		$ 99,089
5	Less variable expenses	47,227						15,889		63,116
6	Contribution margin	$ 27,512						$ 8,461		$ 35,973
7	Less direct fixed expenses	12,312						5,775		18,087
8	Segment margin	$ 15,200						$ 2,686		$ 17,886
9	Less common fixed costs allocated to regions	6,700						4,310		11,010
10	Operating income (loss)	$ 8,500						$ (1,624)		$ 6,876

Now we can see the segment margin and operating income for each of the eight regions. Remember – there are only two regions with data in this tutorial data set but you will have all eight regions in the full data set.



That concludes this data analytics tutorial covering contribution margins, contribution margin ratios, and
segment margins using Excel pivot tables and charts. This video was created and narrated by Dr. Wendy Tietz. Thanks for watching!