

# Data Manual: A Step by Step Manual of How to Create Tables and Charts into Excel (2013 Format)

- Begin by collecting Diagnostic/Pre-test data AND Summative/Post-Test data on your learning segment.
- Sample data has been supplied below on an integrated ELA and science learning segment. The table was created in Microsoft Word. You must put this data into Excel.

**TABLE 1: Oil Spill Conclusion Diagnostic vs. Summative Data by Proficiency Level**  
(Total Number of Students: 20)

Assessment	Number of Developing Students	Percent Developing	Number of Proficient Students	Percent Proficient	Number of Distinguished Students	Percent Distinguished
Diagnostic Assessment	13	65 %	7	35%	0	0%
Summative Assessment	1	5%	10	50%	9	45%

**Directions:**

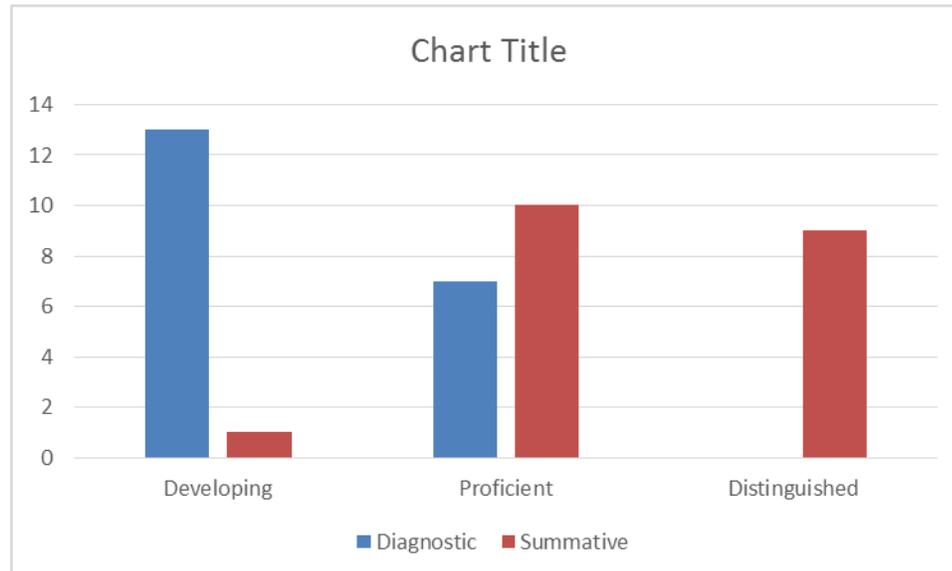
1. Open Excel on your computer and click in blank worksheet.
2. Set up the table below within Excel.

	A	B	C
<b>1</b>		<b>Diagnostic</b>	<b>Summative</b>
<b>2</b>	<b>Developing</b>		
<b>3</b>	<b>Proficient</b>		
<b>4</b>	<b>Distinguished</b>		

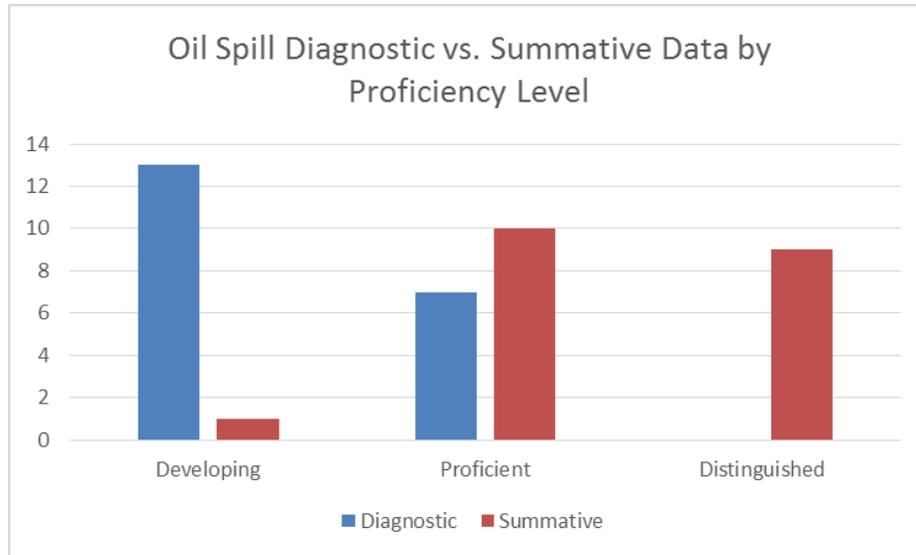
3. Fill in the NUMBER of STUDENT data from the above table in each proficiency level (i.e. Developing, Proficient, Distinguished) within the chart on Excel. The table should appear as follows:

	Diagnostic	Summative
Developing	13	1
Proficient	7	10
Distinguished	0	9

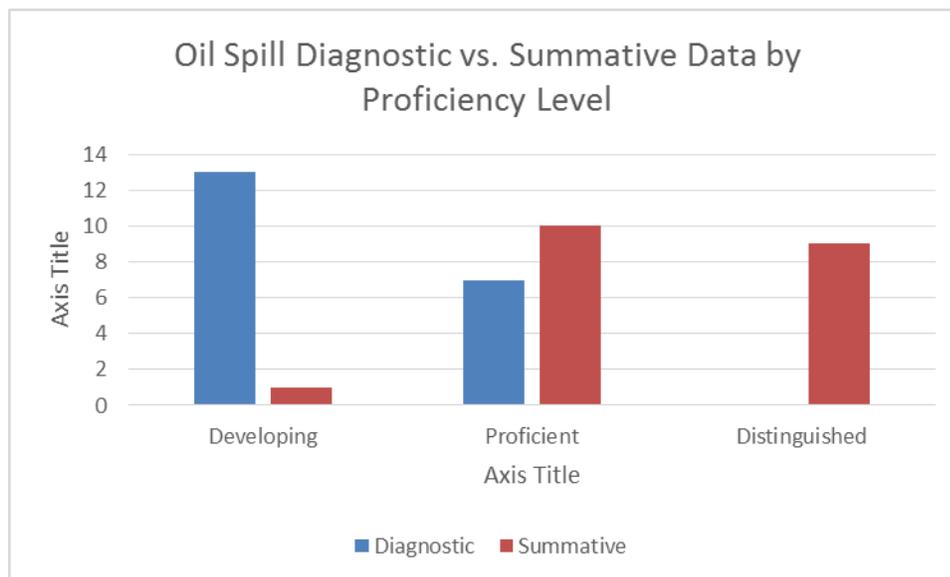
4. Highlight the entire table and click on the Insert ribbon on the top of your screen. Click on  above the word **Charts**. Click on the first 2-D Chart option. The chart should appear as follows:



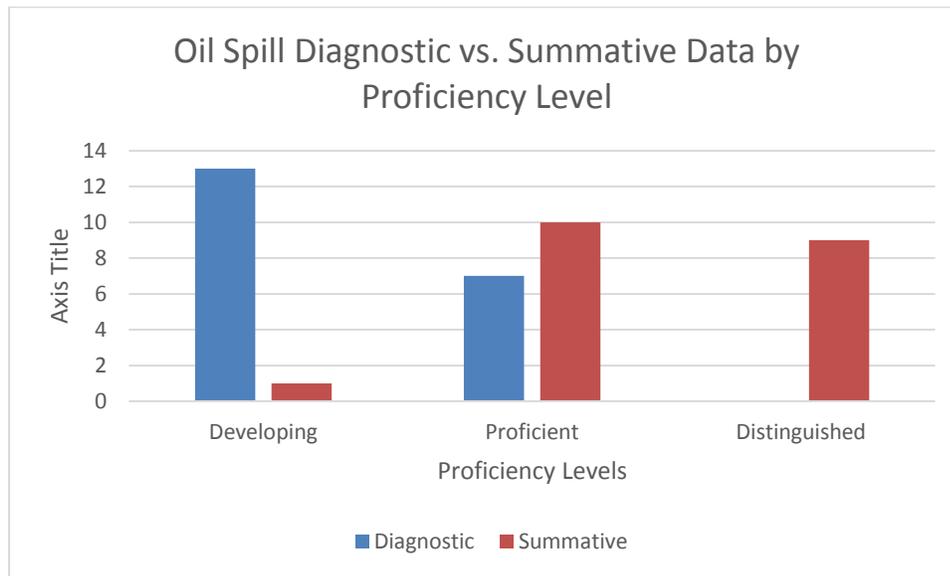
5. Click on Chart Title in the chart. Insert the title *Oil Spill Diagnostic vs. Summative Data by Proficiency Level* by typing it in the space provided. The chart should appear as follows:



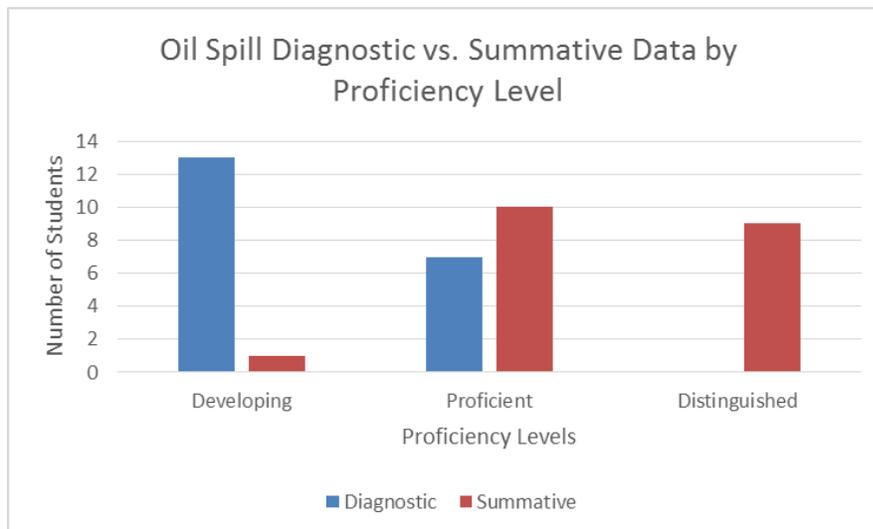
6. Add a label to your x-axis by clicking on the + box at the upper right corner outside of your graph. Click on the Axis Titles box and a checkmark will be inserted in it. The words Axis Title are now present on both the x- and y-axes of your chart. The chart should appear as follows:



7. Click on Axis Label in the x-axis (horizontal axis) and type in *Proficiency Levels*. The chart should appear as follows:

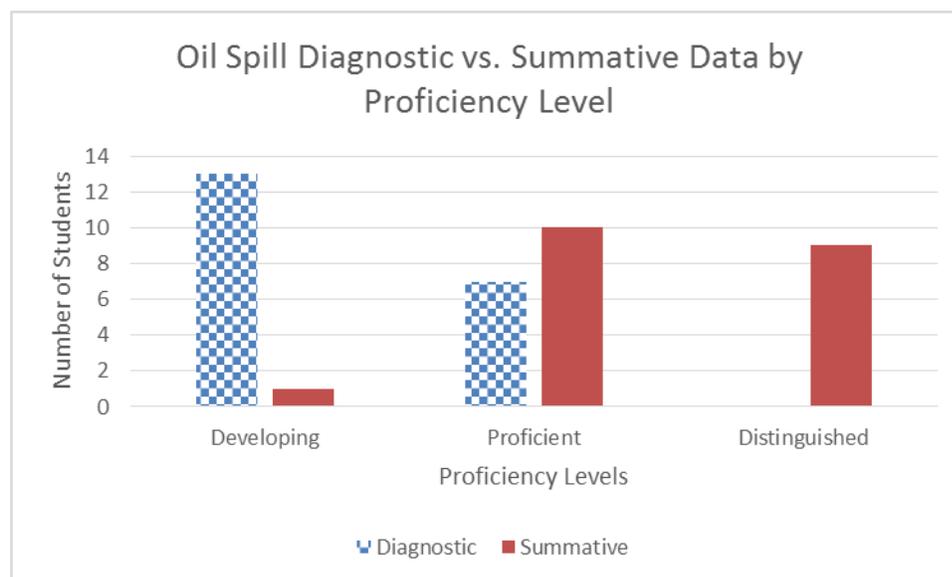


8. Click on Axis Label in the y-axis (vertical axis) and type in *Number of Students*. The chart should appear as follows:



9. To change the Diagnostic bars to a pattern for ease of differentiating between the Diagnostic and Summative Assessments when photocopied, double click within the chart. A Format Chart Area window will be shown on the right of your computer screen.

10. Single click on the first blue bar within your chart. This should highlight all the Diagnostic blue bars within the chart. You will know that all the Diagnostic blue bars are highlighted because you will see small circles in all 4 corners of each blue bar.
11. Click on Fill under the Format Data Series tab shown on the right of your screen. If Fill is not shown on the tab, click on the bucket icon to show Fill.
12. Click on Pattern Fill. Click on the checkerboard pattern fill OR the pattern fill of your choosing under Pattern. You may also change the color of the fill by Foreground and/or Background underneath the patterns. The chart should appear as follows:



13. Follow the same directions if you wish to change the Summative Assessment to a pattern. This is not necessary, however, since one can now discern between the Diagnostic and Summative Assessment if the chart was photocopied.

14. Rename Sheet 1 at the bottom of your Excel spreadsheet Diagnostic vs. Summative Data by right clicking on Book 1 and clicking Rename.
15. Open Book 2 at the bottom of your Excel spreadsheet by clicking on the + and rename it Individual Student Data by following the directions in 16 above.
16. The next table shows Diagnostic vs. Summative data for every student in the class. This data is powerful because it shows how individual students performed on both assessments, thus showing individual growth. The table was created in Excel and includes Conditional Formatting, which is optional. It was inserted into Microsoft Word. You must recreate this data in Excel, without Conditional Formatting.

Student	Diagnostic	Summative
1	→ 75	↑ 100
2	→ 75	↑ 88
3	→ 75	↑ 88
4	↓ 50	→ 75
5	↓ 25	↓ 63
6	→ 75	↑ 88
7	↓ 38	→ 75
8	↓ 63	→ 75
9	→ 75	↑ 88
10	↓ 63	→ 75
11	↓ 38	→ 75
12	↓ 50	→ 75
13	↓ 63	↑ 88
14	↓ 63	→ 75
15	↓ 25	→ 75
16	→ 75	↑ 88
17	→ 75	↑ 88
18	↓ 25	→ 75
19	↓ 40	↑ 88
20	↓ 63	→ 75

Key: ↓ Developing  
 → Proficient  
 ↑ Distinguished

17. Set up the table below within Excel using columns A-C and rows 1-21.

<b>A</b>	<b>B</b>	<b>C</b>
Student Number	Diagnostic	Summative
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

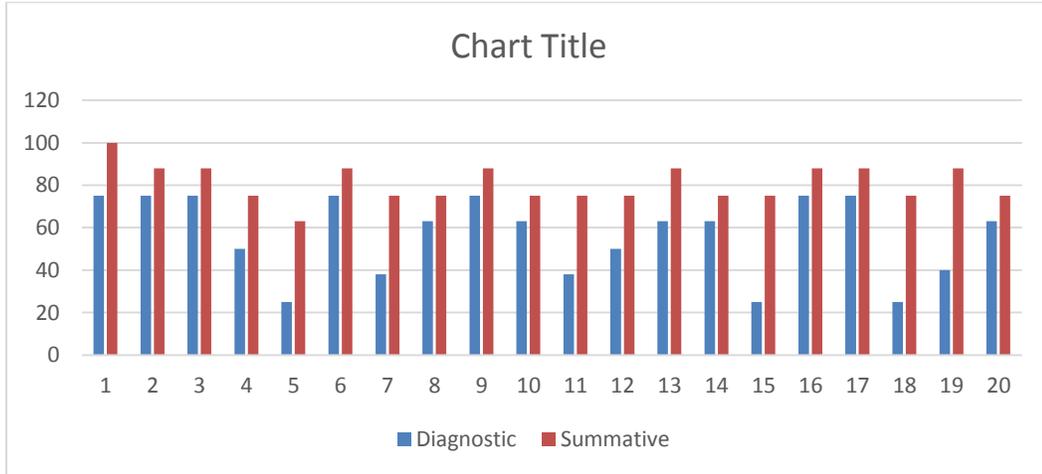
18. To center the contents on the table, highlight the entire table and right click. Click on Format Cells toward the bottom of the menu. Click on Alignment in the top ribbon of the box. Under Text Alignment, change Horizontal from General to Center. Click OK at the bottom. The chart should appear as follows:

Student Number	Diagnostic	Summative
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

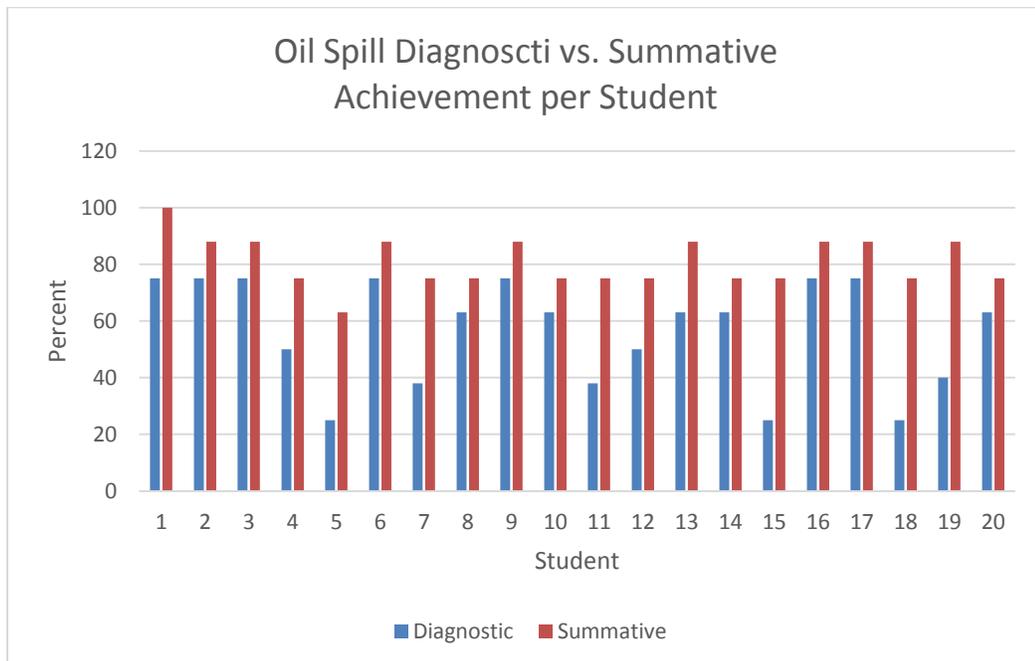
19. Type in the Diagnostic and Summative data into the table from 18 above. The chart should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75

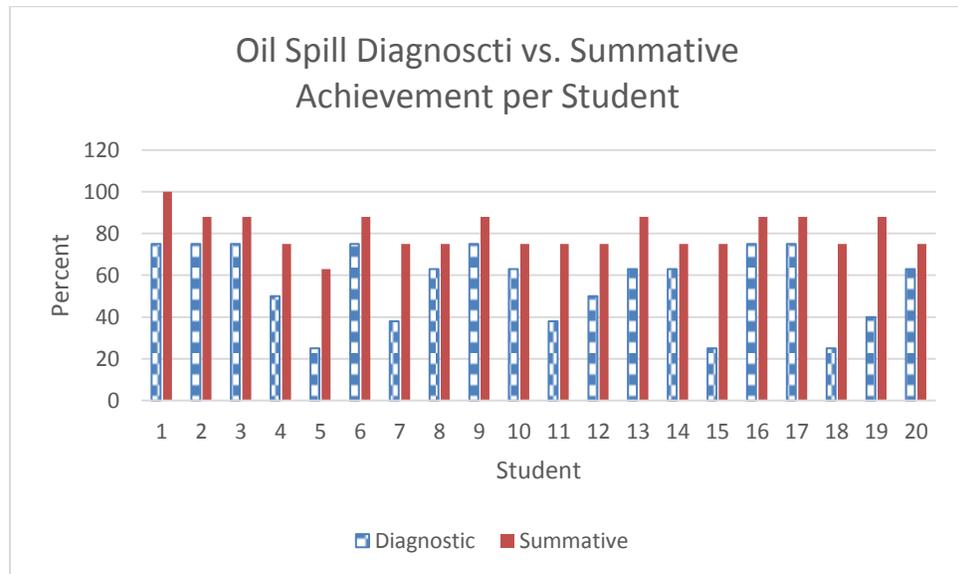
20. Highlight ONLY columns B and C on the table and click on Insert on the top ribbon. Click on  above the word Charts. Click on the first 2-D Chart option. The chart should appear as follows:



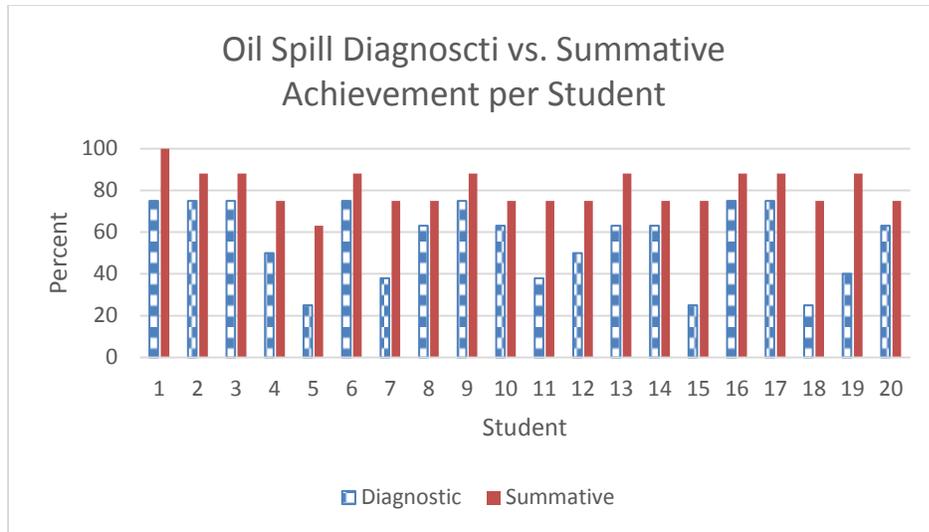
21. Follow the directions in steps 7-10 above to insert the title *Oil Spill Diagnostic vs. Summative Achievement per Student*; the x-axis title *Student* and the y-axis title *Percent*. The chart should appear as follows:



22. Change the Diagnostic bars to a pattern by following the directions in steps 11-14 above. The chart should appear as follows:



23. Format the y-axis numbers to change the maximum to 100% by double clicking anywhere on the y-axis number series. A Format Axis window should be shown at the right of your computer screen. If Axis Options are not shown, click on the  to retrieve it.
24. Under Axis Options, locate Bounds. Under Bounds, type 100.00 into the Maximum box and press Enter on your keyboard. This will change the y-axis bounds to read 0-100%. The chart should appear as follows:



25. To find the Mean (average), Median and Mode of your diagnostic and summative assessments, type in Mean, Median and Mode in separate rows under student 20 on your Achievement per Student table. (Refer to DATA PowerPoint for the relevance of Mean, Median and Mode.) The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
<b>Mean</b>		
<b>Median</b>		
<b>Mode</b>		

26. In the cell next to Mean, type in the formula =average(B2:B21) and press Enter on your keyboard. You can either type in B2:B21 (the diagnostic data, numbers only, for students 1-20) or highlight cells B2 through B21. If you highlight, you must add an end parentheses before pressing Enter on your keyboard. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	56.55	
Median		
Mode		

27. Carry the formula over to the Summative assessment by placing your cursor in the lower right corner of B22. Click on the bottom right corner and wait until you get a solid black + sign (without arrows on the end). Click and drag the formula to the Summative assessment to get the Summative average. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
<b>Mean</b>	56.55	80.85
Median		
Mode		

28. If dragging the formula is frustrating, merely retype the formula, highlighting the Summative Assessment data within the parentheses OR retype the formula as follows: =average(C2:C21) and then press Enter on your keyboard.
29. Do the same for Median by using the formula =median(B2:B21) for the Diagnostic Assessment. Either drag the median formula over to the Summative or type in the formula again. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
<b>Mean</b>	56.55	80.85
<b>Median</b>	63	75
<b>Mode</b>		

30. Follow the same directions for Mode by using the formula =Mode(B2:B21). The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
<b>Mean</b>	56.55	80.85
<b>Median</b>	63	75
<b>Mode</b>	75	75

31. To change the Mean to a whole number, Highlight the 2 cells with the Diagnostic and Summative Means (cells B22 and C22) and right click.
32. Click on Format Cells and Number under the Format Cells ribbon. Change the Decimal Places to 0 and press OK. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
<b>Mean</b>	57	81
<b>Median</b>	63	75
<b>Mode</b>	75	75

33. Follow the directions in 20 to center the Mean, Median and Mode cell contents. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75

34. For the Data Rationale, the Mean is the average of the individual student data set. If the mean increases from the diagnostic to the summative assessment, it was most likely due to effective formative instruction.
35. The Median is the middle number in a number series that is lined from low to high. For example, in the number set 1, 4, 6, 9, 12, 6 is the Median since it is the middle number in the data set. The Median can sometimes be more valuable than the mean, because it can determine if outliers have affected your data set. For example, if most of your class grades range from 63-99 with the exception of 1 student scoring a 15 on a 100 point assignment, the Mean will be affected by the low outlier. This will skew your data as the Mean may be lower than expected (i.e. Mean = 72). The Median will not be affected as drastically (Median= 80). Hence, the Median should be the reported number for explaining the outcome of the assessment.
36. The Mode is the number in a series that is most often present in the data set. The Mode can be important if the most common number was in a lower proficiency level on the diagnostic

assessment, and in a higher proficiency level on the summative assessment.

37. To calculate the Standard deviation for a data set, enter Standard Deviation below Mode on the last table placed in Excel. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75
Standard Deviation		

38. Enter the formula =stdev(B2:B21) under the Diagnostic's Mode of 75. Press Enter. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75
Standard Deviation	19	

39. Either drag the formula over to the Summative Data column or type in the Standard Deviation formula again using the Summative data. The table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75
Standard Deviation	19	9

40. For the Data Discussion, the Standard deviation indicates how many points away from the mean (= or -) most of your data lies. For example, in the above data set most students scores from 36 to 76 ( $57 \pm 19$  points) on the Diagnostic and from 72 to 90 ( $81 \pm 9$  points) on the Summative assessment. Hence, students scored from Developing to a Low Proficient level on the Diagnostic Assessment; whereas their scores were more closely clustered in the Proficient to Distinguished level on the Summative assessment.

41. To add a t-test, type in t-test below Standard Deviation on your Excel table. The table should appear as follows:

42.

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75
Standard Deviation	19	9
t-test		

43. Type in `=ttest(C2:C21,B2:B21, 1,1)` under the Diagnostic Standard Deviation of 19 and press enter. Your table should appear as follows:

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75
Standard Deviation	19	9
t-test	1.42E-07	

44. For the Data Rationale, a t-test compares 2 data sets (Summative vs. Diagnostic or array 1 and 2) and asks you the number of tails needed. Paired t-tests determine if the treatment (Formative Instruction) between the Diagnostic and Summative Assessment was effective. Since we are using the same population and are looking for the results from 2 tests, we use 1,1 after the chosen arrays are selected in the Excel formula. The resulting p value is much lower than the standard alpha value of 0.05 (a statistical constant), hence the Formative Instruction was effective

because the results on the Summative Assessment are most likely not due to chance.

## Optional Conditional Formatting

To get a table to show Conditional formatting like the table below on Excel, follow these directions:

Student Number	Diagnostic	Summative
1	→ 75	↑ 100
2	→ 75	↑ 88
3	→ 75	↑ 88
4	↓ 50	→ 75
5	↓ 25	↓ 63
6	→ 75	↑ 88
7	↓ 38	→ 75
8	↓ 63	→ 75
9	→ 75	↑ 88
10	↓ 63	→ 75
11	↓ 38	→ 75
12	↓ 50	→ 75
13	↓ 63	↑ 88
14	↓ 63	→ 75
15	↓ 25	→ 75
16	→ 75	↑ 88
17	→ 75	↑ 88
18	↓ 25	→ 75
19	↓ 40	↑ 88
20	↓ 63	→ 75
Mean	57	81
Median	63	75
Mode	75	75

1. Highlight only the Diagnostic and Summative data in columns B and C for students 1-20 (cells B2-B21 and C2-C21).
2. Click on Conditional Formatting on the top ribbon under HOME.
3. Click on Icon Sets and More Rules at the bottom.
4. Change the Icon Style to 3 arrows by moving the toggle up OR your desired style.

5. Change Type for the green arrow to Number. Do not forget this step, Percent is tricky to use.
6. Change the Value for the green arrow to 84 OR your desired number. The Distinguished level for the Oil Spill learning segment fell between 85-100.
7. Change Type for the yellow arrow to Number.
8. Change the Value for the yellow arrow to 64 OR your desired number. The Proficient level for the Oil Spill learning segment fell between 65-84.
9. Press OK and you have Conditionally Formatted your table. Now, simply by perusing your table, you can see how the students responded to formative instruction.

### **Inserting Grid Lines on Tables**

1. When copying your tables into Microsoft Word, the gridlines are barely visible. The table appears as follows:

	Diagnostic	Summative
Developing	13	1
Proficient	7	10
Distinguished	0	9

2. To insert gridlines in a table on Excel, highlight the table and click on a barely visible square above Font in the ribbon under HOME.
3. Click on All Borders. The table appears as follows:

	Diagnostic	Summative
Developing	13	1
Proficient	7	10
Distinguished	0	9

## Placing an Conditionally Formatted Excel Table into Microsoft Word

- To ensure your Conditional Formatting, etc. in your tables transfers to from Excel to Microsoft Word, highlight your table and click on Copy and then Copy as Picture in the HOME ribbon.

*Without Copy as Picture*

Student Number	Diagnostic	Summative
1	75	100
2	75	88
3	75	88
4	50	75
5	25	63
6	75	88
7	38	75
8	63	75
9	75	88
10	63	75
11	38	75
12	50	75
13	63	88
14	63	75
15	25	75
16	75	88
17	75	88
18	25	75
19	40	88
20	63	75
Mean	57	81
Median	63	75
Mode	75	75

*With Copy as Picture*

Student Number	Diagnostic	Summative
1	⇒ 75	↑ 100
2	⇒ 75	↑ 88
3	⇒ 75	↑ 88
4	↓ 50	⇒ 75
5	↓ 25	↓ 63
6	⇒ 75	↑ 88
7	↓ 38	⇒ 75
8	↓ 63	⇒ 75
9	⇒ 75	↑ 88
10	↓ 63	⇒ 75
11	↓ 38	⇒ 75
12	↓ 50	⇒ 75
13	↓ 63	↑ 88
14	↓ 63	⇒ 75
15	↓ 25	⇒ 75
16	⇒ 75	↑ 88
17	⇒ 75	↑ 88
18	↓ 25	⇒ 75
19	↓ 40	↑ 88
20	↓ 63	⇒ 75
Mean	57	81
Median	63	75
Mode	75	75

### Item Analysis: Difficulty

- Create an Item Analysis Chart like the following:

Pre-test							
Student	Item 1	Item 1a	Item 1b	Item 2	Item 3	Item 4	Test Mean
<b>Key</b>	<b>10</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>4</b>	
1	4	0	4	3	4	2	59%
2	9	4	5	3	4	2	75%
3	9	4	5	2	2	1	64%
4	8	4	4	1	4	2	68%
5	9	4	5	1	4	1	68%
6	9	4	5	3	3	3	82%
7	8	3	5	2	2	4	73%
8	7	3	4	3	2	2	64%
Mean/Question	8	3	5	2	3	2	
Difficulty							
Discrimination							

2. Each question/item can be evaluated for its difficulty level by adding the sum of each question using =sum(array 1)
  - a. = tells the program a calculation is to be done
  - b. (**array 1**) tells the range of values that will be used in the calculation; i.e. all values included in cells B2 through B9 for the sum
  - c. To find difficulty of Item 1, use =(cell with the sum/cell with total points on the question) OR the =(total accrued points/total number of feasible points). For item 1, =(63/80). This gives an Difficulty of 0.79.
  - d. Do the same for Items 1a, 1b, 3 and 4 using the correct total points.

Pre-test							
Student	Item 1	Item 1a	Item 1b	Item 2	Item 3	Item 4	Test Mean
<b>Key</b>	<b>10</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>4</b>	
1	4	0	4	3	4	2	59%
2	9	4	5	3	4	2	75%
3	9	4	5	2	2	1	64%
4	8	4	4	1	4	2	68%
5	9	4	5	1	4	1	68%
6	9	4	5	3	3	3	82%
7	8	3	5	2	2	4	73%
8	7	3	4	3	2	2	64%
Mean/Question	8	3	5	2	3	2	
Difficulty	0.79	0.81	0.77	0.56	0.78	0.53	
Discrimination							

3. To interpret the difficulty, use the following:
  - a. P-values above 0.90 are very easy items and should be carefully reviewed based on the instructor's purpose.

- b. P-values below 0.20 are very difficult items and should be reviewed for possible confusing language, removed from subsequent exams, and/or identified as an area for re-teaching.
4. Which Item was most difficult for the students? Which item was easiest?

### Item Analysis: Discrimination

1. Using the same chart, find discrimination as follows:

Pre-test							
Student	Item 1	Item 1a	Item 1b	Item 2	Item 3	Item 4	Test Mean
<b>Key</b>	<b>10</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>4</b>	
1	4	0	4	3	4	2	59%
2	9	4	5	3	4	2	75%
3	9	4	5	2	2	1	64%
4	8	4	4	1	4	2	68%
5	9	4	5	1	4	1	68%
6	9	4	5	3	3	3	82%
7	8	3	5	2	2	4	73%
8	7	3	4	3	2	2	64%
Mean/Question	8	3	5	2	3	2	
Difficulty	0.79	0.81	0.77	0.56	0.78	0.53	
Discrimination							

2. Discrimination is the relationship between how well students did on the item and their total exam score.
- The range is from  $-1.00$  to  $1.00$ .
  - Acceptable range:  $0.20$  or higher
  - Ideal value: The closer to  $1.00$  the better
  - Use for test evaluation.
    - The higher the value, the more discriminating the item. A highly discriminating item indicates that the students who had high exams scores got the item correct, whereas students who had low exam scores got the item incorrect.
    - Items with discrimination values *near or less than zero* should be removed from the exam. This indicates that

students who did poorly overall on the exam did *better* on that item than students who did well overall. The item may be confusing for your better scoring students in some way.

3. Calculate the mean for each student using =average(array 1).
4. To find the item discrimination of Item 1, use =PEARSON(array 1, array 2)
  - a. = tells the program a calculation is to be done
  - b. PEARSON refers to the type of calculation, a Pearson coefficient or discrimination.
  - c. (array 1) is the mean array on the test
  - d. (array 2) is student scores on the particular test item
5. Do the same with items 1a, 1b, 2, 3 and 4 using their arrays for array 2.

Pre-test							
Student	Item 1	Item 1a	Item 1b	Item 2	Item 3	Item 4	Test Mean
<b>Key</b>	<b>10</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>4</b>	
1	4	0	4	3	4	2	59%
2	9	4	5	3	4	2	75%
3	9	4	5	2	2	1	64%
4	8	4	4	1	4	2	68%
5	9	4	5	1	4	1	68%
6	9	4	5	3	3	3	82%
7	8	3	5	2	2	4	73%
8	7	3	4	3	2	2	64%
Mean/Question	8	3	5	2	3	2	
Difficulty	0.79	0.81	0.77	0.56	0.78	0.53	
Discrimination	0.65	0.58	0.61	0.12	0.03	0.52	

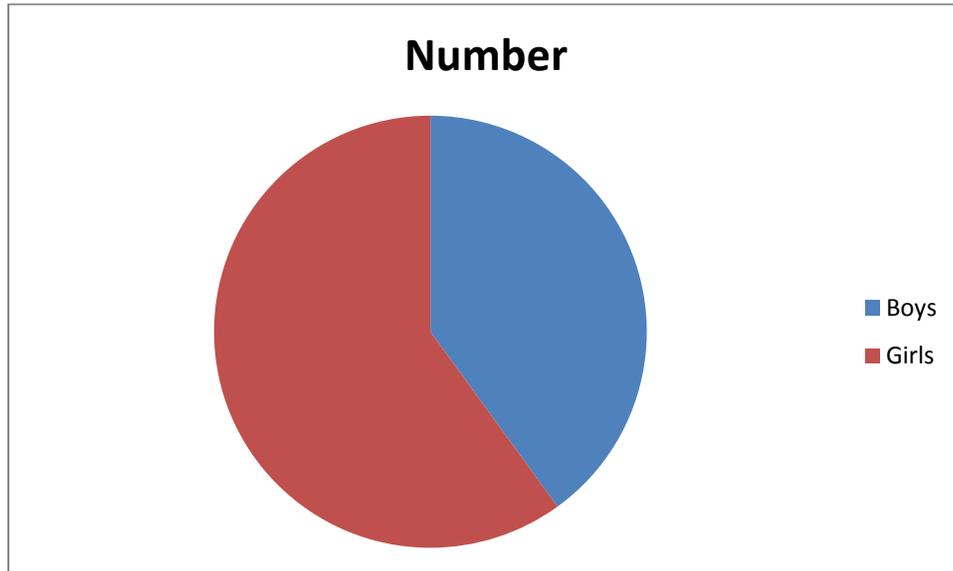
6. Which items did not discriminate between the students that performed well on the test vs. those whose success rate was lower? Which item did discriminate between the students that performed well on the test vs. those whose success rate was lower?

## Relevant Demographics

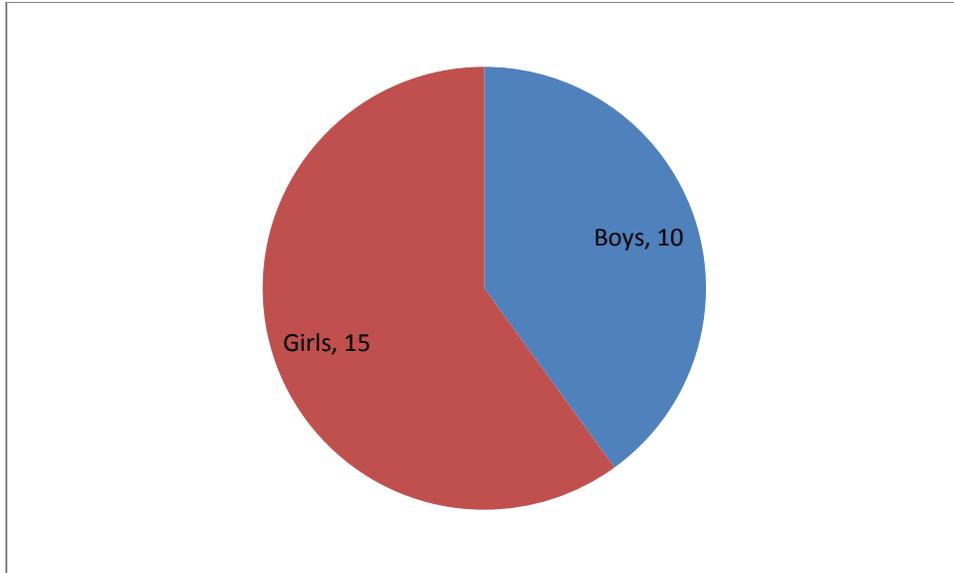
1. Insert Student data by Gender, Ethnicity, etc. into an Excel spreadsheet as follows:

	Number
Boys	10
Girls	15

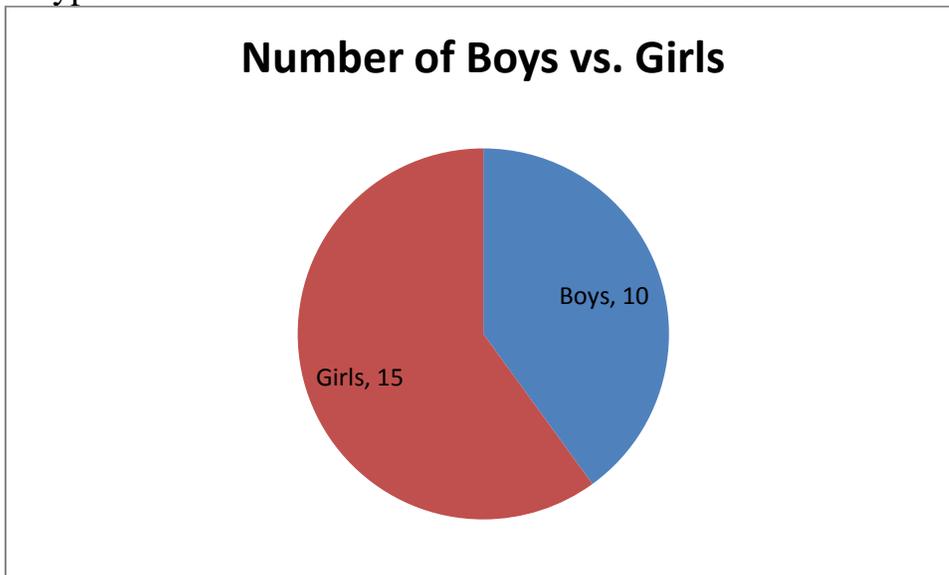
2. Highlight the chart and click on Insert on the top ribbon. Select Pie above Charts, and select the first 2-D chart. The chart should appear as follows:



3. Highlight the pie chart and change the layout above Chart Layout to the desired type. The chart should look similar to the following:



4. Insert a title by clicking on Layout in the top ribbon, and then Chart Title above Labels. Click on Above Chart to insert a Title. Either keep the suggested title or type in a more suitable one. The chart should look similar to the following:



5. Insert a Data Rationale by stating why the demographic data placed in the unit is relevant.
6. Include all demographic data in chart and pie chart form that is relevant for the unit.