

To complete your Excel "Certification," do the following assignment **on your own** and turn in your final results. **Everything** you do for this assignment must be done using Excel (i.e. DO NOT calculate the average values with your calculator and type them into your spreadsheet).

A good source of help for this assignment (and other Excel assignments!) can be found at: <https://www.usna.edu/ChemDept/files/documents/excel-tutor/Excel%202016%20Tutorial.pdf>

Background: Diet Coke[®] and Coke[®] have different densities. A can of one will float when placed in a bucket of water while a can of the other will sink. Work with the data given below to determine which of these two sodas will float and which will sink.

Diet coke			Coke		
volume (mL)	mass (g)	density (g/mL)	volume (mL)	mass (g)	density (g/mL)
4.00	4.0120		4.00	4.2111	
8.00	7.8978		8.00	8.4266	
12.00	11.9300		12.00	12.5045	
16.00	15.7970		16.00	16.6815	
20.00	19.8655		20.00	20.8860	
24.00	23.8974		24.00	25.0075	
28.00	27.9730		28.00	29.1415	
Average					
Graphical Average					

Procedure:

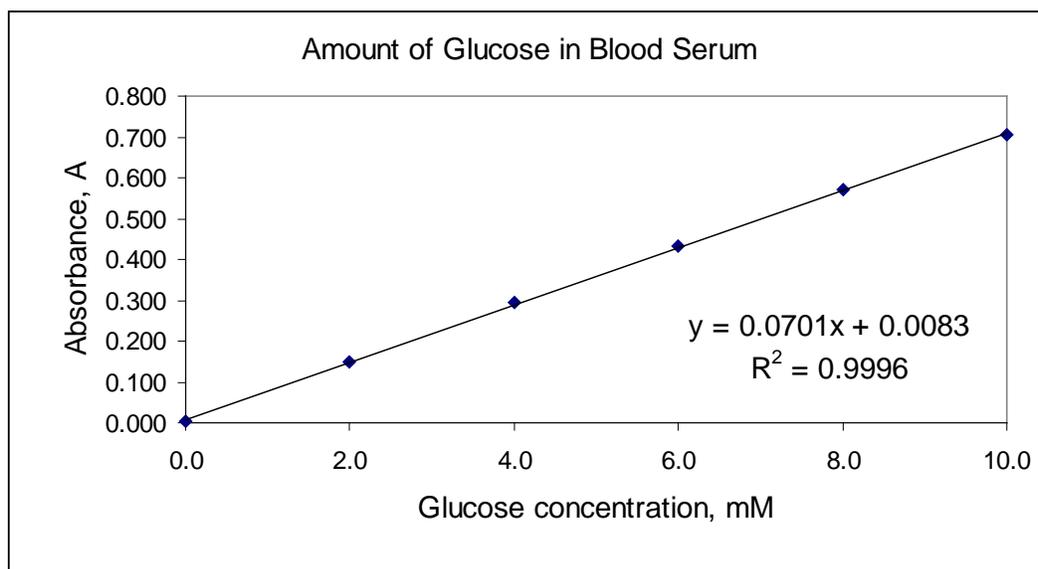
1. Open a blank worksheet in Excel. Enter your name, the date, and "Excel Certification" at the top of the worksheet.
2. Reproduce the table above in the worksheet. Use the tutorial mentioned above or the help menu in Excel to change the formatting of your table, including borders, shading, number of decimal places, etc. such that it **exactly** matches the one above.
3. In the density columns, have Excel calculate and report the density values from the volume and mass data given. Format the values such that they have the correct number of significant digits. Note: Do not compute the density values on your calculator and type them into your spreadsheet.
4. In an appropriate empty cell in your spreadsheet, have Excel calculate the average density for diet coke and the average density for coke. Format the values such that they have the correct number of significant digits and label them as average values.
5. Make an XY Scatter graph of the mass (on the y-axis) vs. the volume (on the x-axis) for each soda type and place the graphs in your spreadsheet. On your graphs, be sure to include appropriate titles and axis labels. Note: Mass vs. Volume is not an appropriate title for either graph.
6. Add a linear trendline to each graph and display the equation of the line and the R^2 value on the graph.
7. Inspect the equation of the trendline on each graph and determine the density of each soda from it. Report these density values in your spreadsheet next to the average density values that you calculated previously. Be sure to label them as graphical values.
8. Somewhere on your spreadsheet, report which soda will float in the bucket of water and which one will sink and explain your choices.
9. Save/print your spreadsheet as a PDF file that contains the data and two graphs **on one page**.
10. Email your instructor a copy of your completed Excel file and PDF.

This page contains data and graph from a different exercise but it is present to demonstrate the basic formatting that you should follow in your work.

Midn Smith
1-Aug-08

Excel Certification

Glucose Concentration, mM	Absorbance, A
0.0	0.002
2.0	0.150
4.0	0.294
6.0	0.434
8.0	0.570
10.0	0.704



Absorbance, A	Glucose concentration, mM
0.367	5.1

Things to note in this sample:

1. The spreadsheet has a title and has a name and a date on it.
2. All data are centered in boxes with appropriate significant figures.
3. All columns have headings that have units.
4. The graph is on the spreadsheet.
5. The graph has only the data points and the linear trendline present (no grid lines).
6. The equation of the line is easily seen and has an R^2 value shown.
7. The axes on the graph both have labels (with units).
8. The graph title is NOT a repeat of the axis labels.
9. The legend is not shown when there is only one set of data plotted.

Grading Rubric for Excel Certification

- _____ 1. Name, the date, and “Excel Certification” are at the top of the worksheet.
- _____ 2. Format of table (border, shading, etc.) matches the one given for coke, diet coke.
All data are centered in boxes with appropriate significant figures (sig figs).
All columns have headings that have units.
- _____ 3. Excel calculated the density values, and significant figures are correct.
- _____ 4. Excel calculated the average density for coke and diet coke with correct sig figs (labeled as average values)
- _____ 5. XY scatter graph of mass (on the y-axis) vs. the volume (on the x-axis) for each soda type was done correctly and on the spread sheet.
The axes on the graph both have labels (with units).
The graph title is NOT a repeat of the axis labels.
The legend is not shown when there is only one set of data plotted.
The background on the spreadsheet should be white, not gray.
- _____ 6. XY scatter graph contains equation of the line and the R^2 value on the graph.
- _____ 7. From the trendline on each graph, the density of coke and diet coke was determined. These values were reported next to the average values calculated previously with the proper title.
- _____ 8. On the spreadsheet, report which soda will float in the bucket of water and which one will sink and explain your choices.
- _____ 9. Table and two graphs are on one page in PDF file.