

Please indicate your solutions clearly in the document using complete sentences and brief explanations. The point is that you indicate to me what the solution is and how it relates to the context of the question being asked. See the example spreadsheet I posted to the course website and the related video (<https://www.youtube.com/watch?v=1wNrxiCeAiQ>) for details on what I consider good form.

Email one spreadsheet file for your entire group to amohr@nebrwesleyan.edu by 11:59 pm on the due date. Make sure everyone's name appears in the document.

Linear Regression

The goal of this project is to fit a linear function to the annual mean carbon dioxide level data available from the Mauna Loa Observatory. You can find the data at:

`ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_annmean_mlo.txt`

Since there is a great deal of data, we want to avoid typing it all manually. Here is the easiest way I know to import the data:

1. Visit the website address.
2. Right click within the browser window and choose "Save as".
3. Open the file in a text editor and delete everything except the columns of numerical data. Save the revised file.
4. Open the file in your spreadsheet software. (When looking for the file from within the software, you may need to change the filetype to "All Files".)
5. The software should ask you how to interpret the file. Choose "Fixed Width" (meaning the data is already nicely arranged in columns) and then click "Finish".

If all went according to plan, your data should be nicely formatted in the spreadsheet. You can now delete the third column, as we won't be using it.

Now that you have the data ready, we can create the chart.

1. Create a scatter plot in which the year is the input and the annual mean carbon dioxide level is the output.
2. Fit a linear function to the scatter plot.
3. Forecast the function ahead ten years.
4. Display the equation and correlation coefficient ("R-squared value") on the chart.
5. Title the chart and label both axes.
6. Make any aesthetic changes you think enhances the clarity of your data, such as changing the domain and range shown in your chart if either is too big.

Include brief explanations for the following questions below your chart.

1. Read the section titled "How Good Is the Fit?" on page 195 in the text. Based on the discussion there, is a linear function well-suited to the carbon dioxide data?

2. What does the y -intercept mean in this context? How do you account for its apparently nonsensical value? (You may find the discussion following Example 2 on page 192 in the text relevant.)
3. What does the slope mean in this context?
4. According to the linear function, what will the annual mean carbon dioxide level be in 2020?