

Honors Statistics Summer Assignment

Welcome to the Statistics Honors course!

Statistics is a challenging course with a high workload. Often students find that they need to put in much more time and effort than they have in previous math courses. If you do not adjust your efforts and commitment to this new challenge, your grade may be lower than expected. Carefully consider whether this is the correct course placement for you.

Please follow the directions below to complete this work. This assignment is due by the first day of class and will count as a *quiz grade* in the first marking period.

If you have any questions about the course or the Summer Assignment, feel free to email me at nshemelina@lowell.k12.ma.us. Please DO NOT email me the assignment itself. Submissions will be accepted through Google Classroom. You will get information on this when classes begin.

Materials

It is **highly recommended** that all students in Statistics Honors class own a graphing calculator, a Texas Instruments *TI-84* or *TI-84 Plus*, or *TI-Nspire*. If you already have one, or need one for another class, do not buy a second graphing calculator. Students must have their calculators with them on the first day of classes.

Note: TI-30XS MultiView DOES NOT have the required functionality. Please do not purchase this calculator.

Note: You can download a *Calculate84* app and use it on your phone at home, but you will not be allowed to use your phone on quizzes and tests.

"Statistical thinking will one day be as necessary for efficient citizenship
as the ability to read and write." H.G.Wells

Summer Assignment

The United States Presidents' Ages at the Time of Their Inauguration

Before you start working on the assignment, familiarize yourself with your Graphing Calculator. Use the instruction manual (and Google) as a reference and make sure you can:

- A. Enter and edit lists
- B. Sort a list in ascending and descending order
- C. Find the sum and cumulative sum of a list
- D. Find mean, median, range, and quartiles of a data list
- E. Find the standard deviation
- F. Graph dot plots, line plots, histograms, and box plots

You should have a basic knowledge and familiarity with the TI calculator by the time you arrive in class in September.

Help on TI-83/84 calculator:

<https://studenthelp.cpm.org/m/TI-84>

You can do a lot of this work in Google sheets! (If you are stuck with Google sheets, look here:

<https://docs.google.com/spreadsheets/d/1NLBFpp35aTskhTPJbKQvviq3YX0Nc2eIXa4GU9Y4mrs/edit#gid=0> for some hints)

1. CALCULATIONS

Using your calculator (or Google Sheets, or MS Excel), calculate the minimum, maximum, mean, median, standard deviation, quartile 1 (Q1), quartile 3 (Q3) of your data. Find the range and the Interquartile Range (IQR).

Calculator Assignment

- Input the Presidents ages at inauguration into List 1
- Copy List 1 into List 2
- Sort List 2 in ascending order
- Calculate or find the following values and record these values in a document:
 - Calculate the Mean, Median and Standard Deviation on the TI calculator
 - Calculate the 5 Number Summary
 - Calculate the Range of data set
 - Calculate Q1 and Q3
 - Calculate the Interquartile Range (IQR)

2. GRAPHICAL DISPLAY PRACTICE (on the TI 83/84)

You can create graphs on your calculator, but you'll need to submit them with your work. At least two different graphs are required to receive a full credit. You can draw them (copy from your calculator) by hand or use a statistical applet if you are familiar with one. When you copy your graphs to paper, make sure that they are scaled correctly and have appropriate titles. Graphs to include: dot plot, box plot (box-and-whisker), histogram, scatterplot, etc.

3. DATA ANALYSIS

Interpreting the statistical values that you calculated is the most critical part of any data analysis. Submit a typed one page essay that summarizes your statistical findings and analysis.

After recording the statistical values, write at least two paragraphs summarizing your data analysis. Interpret the values and show what they represent in the context of the data set. Draw conclusions about the president's ages at the time of their inauguration.

Do not limit your research to the ages of the presidents. Look at background information that will help explain why they were inaugurated at a certain age. Incorporate any and all interesting facts that enhance your statistical analysis.

4. WORK SUBMISSION

Submit your document(s) on Google Classroom (you will be emailed the code) or print and bring it to class on the first day of school. Do not email any documents to the teacher. Be prepared to discuss your findings in class, i.e. who is the oldest, youngest etc. Does there appear to be a minimum or maximum age at which a president can be lectured? What age category do most of the presidents fall into? What factors might cause this to be the case? Are there any "clusters" of certain age groups? Are there any other interesting facts about the U.S. Presidents in relation to their ages?

Summer Assignment Grading Rubric

Mathematical Calculations: Calculation of Mean, Standard Deviation, Determining Values of Five Number Summary /50							
Meets Standard	Almost There	Getting There	Making Progress	On the way	Starting Off	Ready to start	Not started
All calculations are correct	One value incorrect or missing	Two values incorrect or missing	Three values incorrect or missing	Four values incorrect or missing	Five values incorrect or missing	Six values incorrect or missing	No values provided or all incorrect
50 pts	43 pts	36 pts	29 pts	22 pts	15 pts	8 pts	0 pts

Graphing: Graphing the data /20		
Great graphs	Getting going with graphs	No graphs
More than one graph is shown to demonstrate data.	One graph is shown to represent data.	No graphs are shown.
20 pts	10 pts	0 pts

Essay: Two paragraph essay /20		
Two paragraph Essay	One paragraph essay	No essay
Two paragraph essay notes multiple items in data. Discusses and or makes conjectures about the data.	One paragraph essay notes some things about data. cursory discussion of data.	No essay submitted.
20 pts	10 pts	0 pts

Timeliness: On-time submission /10		
On time	Late	Too late
The assignment was submitted on time, on the first day of school.	The assignment was submitted one day late.	The assignment was submitted two or more days late.
10 pts	5 pts	0 pts