AP Statistics Summer Work

You will be watching 5 short videos, then doing four problems from what you learn in the videos. The problems deal with making some plots you'll see during the class and finding some important measurements of data. For some of the plots, you will be able to use your calculator. I will go through the steps to do them on a TI 84. If you don't have the calculator, you don't need it for the summer work, but you will need it for the class. Put all of your answers on paper and email a picture of it to me when you finish. If you can, scan as a pdf and send that way. Note some problems have a few parts. You can send it to me as soon as you finish, but all must be sent in before the first day of class. Each problem is worth 5 points, so 20 points total. (80 and 82 are part of one problem) I realize this is new to you, so I understand if it is not perfect. I will take that into account when grading. Be aware, if you send in very poor work, you will be graded accordingly. If you watch the videos, you should be fine. Another source that would help is Kahn Academy if you need it.

Video 1: What is Statistics:

https://www.learner.org/series/against-all-odds-inside-statistics/what-is-statistics/

Copy this link, put in your browser and watch the video. This one is just an overview of statistics.

Video 2: Stemplots:

https://www.learner.org/series/against-all-odds-inside-statistics/stemplots-2/

Watch the video, then do the following problem.

49. **Do women study more than men?** We asked the students in a large first-year college class how many minutes they studied on a typical weeknight. Here are the responses of random samples of 30 women and 30 men from the class:

Women					Men				
180	120	180	360	240	90	120	30	90	200
120	180	120	240	170	90	45	30	120	75
150	120	180	180	150	150	120	60	240	300
200	150	180	150	180	240	60	120	60	30
120	60	120	180	180	30	230	120	95	150
90	240	180	115	120	0	200	120	120	180

Make a back to back stemplot for men vs women (about the 10 minute mark in the video will help with this). Compare the two plots. Does it appear that one gender studies more than the other? Do either gender have any outliers? If so, what are they?

Video 3: Histograms:

https://www.learner.org/series/against-all-odds-inside-statistics/histograms/

Watch the video, then do the following problem.

53. **Traveling to work** How long do people travel each day to get to work? The following table gives the average travel times to work (in minutes) for workers in each state and the District of Columbia who are at least 16 years old and don't work at home.[30]

AL	23.6	LA	25.1	OH	22.1
AK	17.7	ME	22.3	OK	20.0
AZ	25.0	MD	30.6	OR	21.8
AR	20.7	MA	26.6	PA	25.0
CA	26.8	MI	23.4	RI	22.3
CO	23.9	MN	22.0	SC	22.9
CT	24.1	MS	24.0	SD	15.9
DE	23.6	MO	22.9	TN	23.5
FL	25.9	MT	17.6	TX	24.6
GA	27.3	NE	17.7	UT	20.8
HI	25.5	NV	24.2	VT	21.2
ID	20.1	NH	24.6	VA	26.9
IL	27.9	NJ	29.1	WA	25.2
IN	22.3	NM	20.9	WV	25.6
IA	18.2	NY	30.9	WI	20.8
KS	18.5	NC	23.4	WY	17.9
KY	22.4	ND	15.5	DC	29.2

(a) Make a histogram of the travel times using classes of width 2 minutes, starting at 14 minutes. That is, the first class is 14 to 16 minutes, the second is 16 to 18 minutes, and so on.

(b) The shape of the distribution is a bit irregular. Is it closer to symmetric or skewed? Describe the center and spread of the distribution. Are there any outliers?

If you want to try to make the histogram on your calculator, here is the steps:

1. If you have anything in y=, clear it out
2. Hit the Stat button, then 1:Edit
3. Enter all your data into L1 (So, type in 23.6 enter, 17.7 enter, etc.)
4. Once all the data is in, hit 2nd y= to bring up the plots
5. Hit enter on #1, then highlight ON and hit enter
6. Hit the down arrow to go to TYPE, then the right arrow to the 3rd graph (the one that looks like a histogram). Once you highlight it, hit enter
7. Hit the Zoom button, then 9:ZoomStat. You should see the histogram
8. To make it look like what the directions above want, hit Window
9. On the Window menu, change Xmin to 14 and Xscl to 2, then hit Graph.
10. If you hit the Trace button, you can scroll across to get the numbers in each bin

Video 4: Measures of Center:

https://www.learner.org/series/against-all-odds-inside-statistics/measures-of-center/

Watch the video, then do the following problem.

80. **Cowboys** The 2011 roster of the Dallas Cowboys professional football team included 7 defensive linemen. Their weights (in pounds) were 321, 285, 300, 285, 286, 293, and 298. Calculate the mean. Show your work.

82. **Cowboys** Refer to Exercise 80.

(a) Find the median by hand. Show your work.

(b) Suppose the heaviest lineman had weighed 341 pounds instead of 321 pounds. How would this change affect the mean and the median? What property of measures of center does this illustrate?

Video 5: Boxplots

https://www.learner.org/series/against-all-odds-inside-statistics/boxplots/

Watch the video, then do the following problem.

91. **Don't call me** In a September 28, 2008, article titled "Letting Our Fingers Do the Talking," the *New York Times* reported that Americans now send more text messages than they make phone calls. According to a study by Nielsen Mobile, "Teenagers ages 13 to 17 are by far the most prolific texters, sending or receiving 1742 messages a month." Mr. Williams, a high school statistics teacher, was skeptical about the claims in the article. So he collected data from his first-period statistics class on the number of text messages and calls they had sent or received in the past 24 hours. Here are the texting data:

0	7	1	29	25	8	5	1	25	98	9	0	26
8	118	72	0	92	52	14	3	3	44	5	42	

(a) Make a boxplot of these data by hand. Be sure to check for outliers.

(b) What is the five-number summary?

(c) What is the Inter-Quartile Range?

(d) Doe the boxplot support or contradict the article?

You can make a boxplot much like you did a histogram on the calculator. Do all the same steps, but choose the 4th or 5th plot under TYPE. The 4th shows outliers, while the 5th does not.

One other thing on the calculator that is handy. If you put all your data in L1, as explained above, then hit Stat, slide over to CALC, then hit 1: 1-Var Stats, you will get some important info, the mean, the standard deviation (we'll go over this when we start class), and if you scroll down, the 5 number summary.