Welcome to AP Statistics!

This assignment is designed to review the basic concepts of statistics in preparation for the advanced level course work. These are all statistics skills/concepts presented in previous math courses.

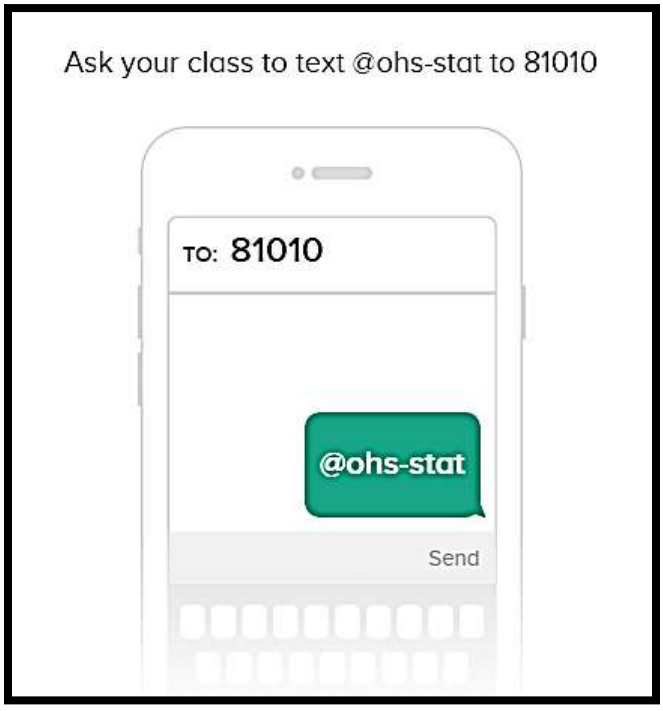
Topics include:

- Numerical analysis (mean, median, standard deviation, quartiles)
- Graphical analysis (histograms, boxplots, skewedness)
- Statistical Reasoning (comparing data and analyzing statistical methods)
- Calculator usage

Using the resources found on my OHS webpage, complete the attached assignment.

The assignment is due the SECOND day of school and will count as a 50 point TEST GRADE.

If you have questions during the summer, you can reach me by email at ryoung@henry.k12.ga.us or message me through REMIND by joining my class using the information below.



Have a wonderful summer and I will see you in August!!! ☺

\- *Ms. Young*

AP Statistics Summer Assignment Name _____

1) Below are the typing speeds (words per minute) for 22 secretarial applicants of an international cosmetic company:

68 72 91 47 52 75 63 55 65 35 69 70 84 45 58 61 69 22 46 55 66 71

a) Find the following statistics regarding the typing speed of the 22 applicants

$(mean)\ \bar{x} =$ _____ *(Standard deviation)* $s_x =$ _____

Five number summary: min = _____

Q1 = _____

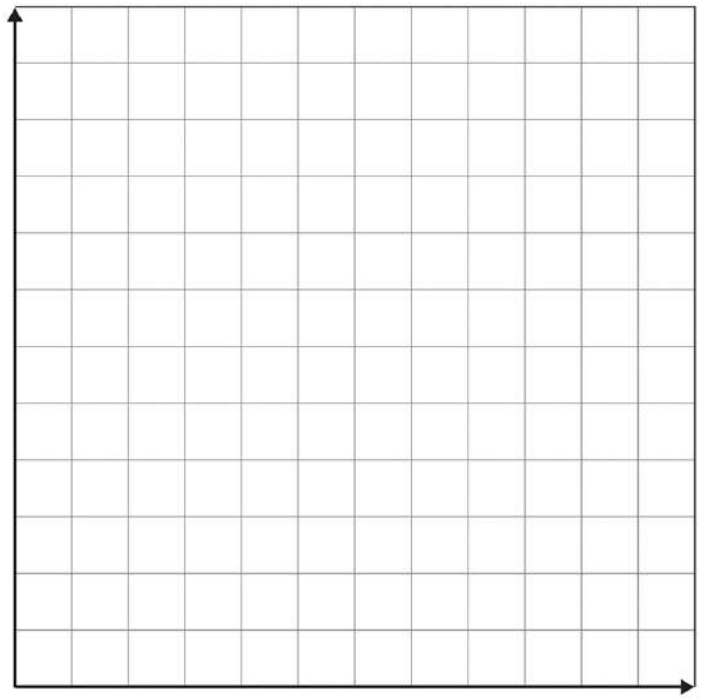
Median = _____

Q3 = _____

max = _____

IQR = _____

b) Create a well labeled histogram of the data. Describe the distribution of typing speeds referring to shape, center, spread, and outliers.



2) The age of members of a local cycling club are shown below:

14 17 18 18 19 20 20 21 23 24 25 25 31 37 39 53 59 73

a) Find the five number summary and IQR for this data and determine if there are any outliers, using the outlier test described in the notes.

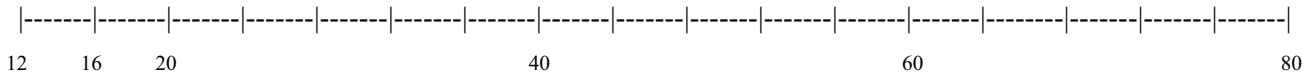
min = _____ Q1 = _____

Median = _____ Q3 = _____

max = _____ IQR = _____

Outliers?

b) Create a boxplot ON the number line below. Describe the distribution referring to shape, center, spread, and outliers.



c) Using your calculator, create a MODIFIED boxplot and draw that ABOVE the number line. What are the advantages (if any) of using a modified boxplot over a basic boxplot.

3) The scores of 18 first year college ***women*** on the Survey of Study Habits and Attitudes (this psychological test measures motivation, study habits and attitudes toward school) are given below:

154 109 137 115 152 140 154 178 101 103 126 126 137 165 165 129 200 148

The college also administered the test to 20 first-year college ***men.*** There scores are also given:

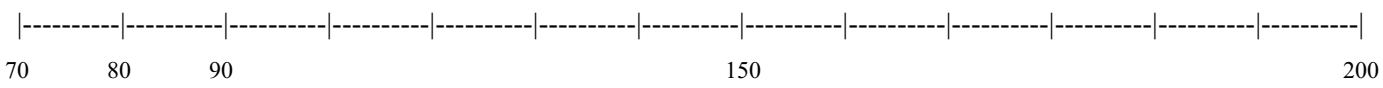
108 140 114 91 180 115 126 92 169 146 109 132 75 88 113 151 70 115 187 104

Construct side-by-side modified boxplots for the two data sets. (boxplots stacked on top of each other using the SAME SCALE)

Write a narrative comparison of the shape, center, spread, and unusual features of the two distributions.

Women

Men



4) The following two way table classifies hypothetical hospital patients according to the hospital that treated them and whether they survived or died.

	Survived	Died	Total	Percent Died
Hospital A	800	200	1000	
Hospital B	900	100	1000	

a) Calculate the proportion of hospital A's patients who died and the proportion of hospital B's patients who died.
Which hospital had the highest percentage of patient deaths? **Hospital A** **Hospital B**

If you, or a friend, had to go to a hospital which one would you choose (assuming your goal is survival)? **Hospital A** **Hospital B**

Some patients enter a hospital in fairly good condition, while others are very ill. Suppose that when we further categorize each patient according to whether they were in fair condition or poor condition prior to treatment we obtain the following two-way tables:

Fair Condition:

	Survived	Died	Total	% Died
Hospital A	590	10	600	
Hospital B	870	30	900	

Poor Condition:

	Survived	Died	Total	% Died
Hospital A	210	190	400	
Hospital B	30	70	100	

b) Convince yourself that when the "fair" and "poor" condition patients are combined, the totals are indeed those given in the original table (copied below):

	Survived	Died	Total
Hospital A	800	200	1000
Hospital B	900	100	1000

Convinced? Yes, combining the values in the two sub-tables gives me the original table values
No, the numbers don't match.

c) Fill in the "% Died" columns in the two sub-tables (above).

Among patients who were in fair condition, compare the death rates.
Which hospital does a better job keeping patients in "fair condition" alive? **Hospital A** **Hospital B**

Among patients who were in poor condition, compare the death rates.
Which hospital does a better job keeping patients in "poor condition" alive? **Hospital A** **Hospital B**

d) Write a few sentences explaining (using the data given) how hospital B has the higher survival rate overall, yet hospital A has the higher survival rate for each type of patient. Hints: Do fair or poor patients tend to survive more often? Does one type of hospital tend to treat most of one type of patient? Is there any connection here?

e) Which hospital would you rather go to if you were ill? Explain.

5) Suppose you are the Spokesperson for a prominent US Senator. The Senator is considering sponsoring a bill to lower the legal drinking age from 21 to 18. He wants to assess the public opinion of his constituents before proceeding. He asks you to administer a survey to determine public support for the proposal. You want to make sure that your results are reliable, so you assign three of your assistants to go out and perform independent surveys. When they report back, you are disappointed to find that the three assistants have determined that public support for the proposal is 84% (report A), 47% (report B), and 12% (report C).

What could explain the huge differences in the results of the three reports? Use complete, detailed sentences.