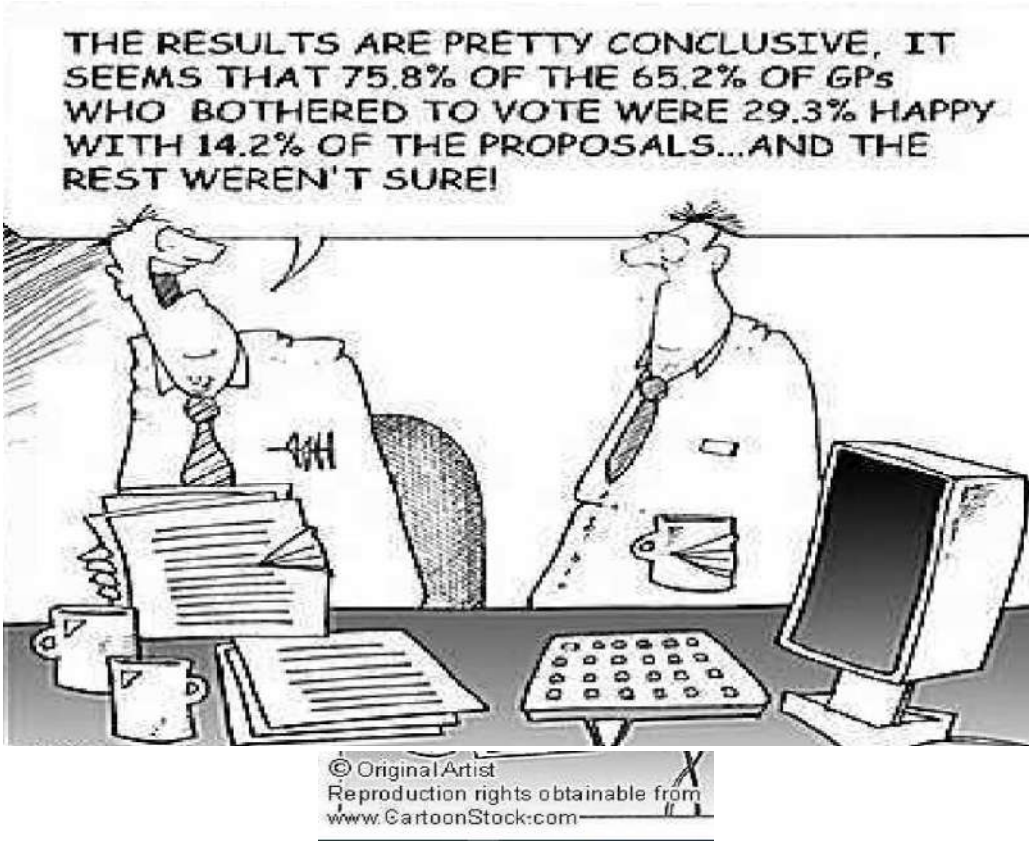
AP Stat Summer Work 2022



Part 1: Read and take notes/outline chapter 1: Data Analysis

*to be completed in your AP stats notebook

Part 2: Chapter 1 Book Practice

Part 3: 2 Previous AP Free Response Questions

Packet Due Date: Hard copy due first day of class

Be prepared for a test on chapter 1 on the third day of class.

This packet will count for a 30 point quiz grade for both completion and accuracy.

Part 2: Book Practice

this models the amount of work you will have assigned for each chapter throughout the year

- to be handed in/all work shown
- check answers in the back of the book

Pages 7-8 #1-9 odd and 10
Pages 24-30 #13-23 odd, 27, 29, 33, 35, 40-43
Pages 47-54 #45, 49, 51, 55, 59, 63, 65, 69, 77, 80-85 all
Pages 75-80 #87, 89, 91, 95, 97, 101-105 odd, 109-115 odd, 121, 123-126 all

Part 3: "FRAPPY" Free Response AP Problem. . . Yay!!

The following problems are taken from an actual Advanced Placement Statistics Examination. Your task is to generate a complete, concise statistical response in 15 minutes (or less). You will be graded based on the AP rubric. After grading, keep this problem in your files for your AP Exam preparation.

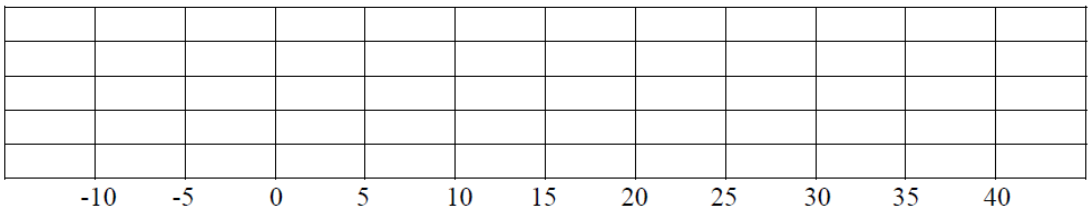
1. A consumer advocate conducted a test of two popular gasoline additives, A and B. There are claims that the use of either of these additives will increase gasoline mileage in cars. A random sample of 30 cars was selected. Each car was filled with gasoline and the cars were run under the same driving conditions until the gas tanks were empty. The distance traveled was recorded for each car.

Additive A was randomly assigned to 15 of the cars and additive B was randomly assigned to the other 15 cars. The tank of each car was filled with the gasoline and the assigned additive. The cars were again run under the same driving conditions until the tanks were empty. The distance traveled was recorded and the difference in the distance with the additive minus the distance without the additive for each car was calculated.

The following table summarizes the calculated differences. Note that negative values indicate less distance was traveled with the additive than without the additive.

Additive	Values below Q1	Q1	Median	Q3	Values above Q3
A	-10, -8, -2	1	3	4	5, 7, 9
B	-5, -3, -3	-2	1	25	35, 37, 40

A. On the grid below, display parallel boxplots (showing outliers, if any) of the differences of the two additives.



Show all of your work. Indicate clearly the methods you use.

B. Two ways that the effectiveness of the gasoline additive can be evaluated are by looking at either

- the *proportion* of cars that have increased gas mileage when the additive is used in those cars.

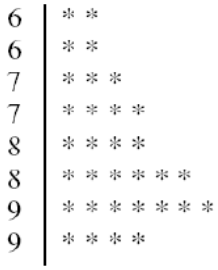
OR

- the *mean increase* in gas mileage when the additive is used in those cars.

i. Which additive, A or B, would you recommend if the goal is to increase gas mileage in the *highest proportion* of the cars? Explain your choice.

ii. Which additive, A or B, would you recommend if the goal is to have the *largest mean* increase in gas mileage? Explain your choice.

The graph below displays the scores of 32 students on a recent exam. Scores on this exam ranged from 64 to 95 points.



(a) Describe the shape of this distribution.

(b) In order to motivate her students, the instructor of the class wants to report that, overall, the class's performance on the exam was high. Which summary statistic, the mean or the median, should the instructor use to report that overall exam performance was high? Explain.

(c) The midrange is defined as $\frac{\text{maximum} + \text{minimum}}{2}$. Compute this value using the data on the preceding page.

Is the midrange considered a measure of center or a measure of spread? Explain.