Name: _____

MATH 307
Spring 2023
HW 8: Due 03/01 (02)

"Statistically, the probability of any one of us being here is so small that you'd think the mere fact of existing would keep us all in a contented dazzlement of surprise."

– Lewis Thomas

Problem 1. (10pt) The number of hours Elizabeth has spent on TokTik over the past few days is given below:

$$0 \quad 1 \quad 6 \quad 1 \quad 3 \quad 6 \quad 2 \quad 6 \quad 9 \quad 7 \quad 8$$

(a) Find the median of this dataset.

(b) Find the IQR of this dataset.

(c) A 5-number summary for a dataset consists of the min, Q_1, median, Q_3, and max for the data. Find the 5-number summary for this dataset.

Problem 2. (10pt) Will took the SAT and received a 1650 while Chris took the ACT and received a 23. Suppose that both the SAT and the ACT had scores which were normally distributed. Furthermore, suppose that the SAT had a mean score of 1500 and standard deviation 300 while the ACT had a mean score of 21 and standard deviation of 5. Relative to their own exams, who did better? Be sure to justify your answer.

Problem 3. (10pt) STACKS is a local college. At the school, GPAs are approximately normally distributed with mean 3.205 and standard deviation 0.27.

  (a) Find the percentage of students that have a GPA lower than 2.8.

  (b) Find the percentage of students that have a GPA greater than 3.5.

  (c) Find the percentage of students that have a GPA between 2.8 and 3.5.

Problem 4. (10pt) Margarita claims that you can generate a random sample of the numbers 2 through 12 by continuously rolling two die and taking the sum of the numbers that appear.[1] Explain why Margarita is incorrect. Be sure to include the concept of bias in your response. How would you help Margarita understand why she is wrong?

---

[1]By a random sample of a finite set of numbers, we mean that the probability of all elements of the sample space are equal.