

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    1    6    1    3    6    2    6    9    7    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. 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?