**Stat 50, Quiz #2, Spring 2025**

03/18/2025

**Instructions.** Write your name, read these instructions but don't start the quiz before you are told so. This quiz consists of three problems and is worth 5.5 points. You may use a two-page note sheet and a calculator. For the end results, include units (if there are any), and use at least three-decimal points when rounding your final answers unless otherwise stated. If you have questions, let me know. You have 25 minutes to complete the quiz. Good luck!

**NAME:**

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1. (1.5 pts) Consider an experiment that consists of rolling a fair die 10 times with independent rolls. Let $X$ denote the random variable for the number of times a six comes up in this experiment. Determine the distribution of $X$ along with its parameters. Then, compute the mean and standard deviation of $X$.

1. (1.5 pts) The number of cars that enter into a parking garage during morning hours on Mondays has an approximate Poisson distribution with an average of 2.5 cars per minute. Compute the probability that exactly 10 cars enter into the garage during a period of 5 minutes on a Monday morning. Show your work.

2. (2.5 pts) A shipment of a certain brand of laptop chargers contains 240 items. Assume that five of the chargers in the shipment are defective and consider a random sample of 10 items to be inspected for defects.

   Determine the probability that there is at most one defective charger in the sample (of 10 chargers). Briefly explain which distribution you used for this computation and why.