MATH 154, Exam #2, Part I, Spring 2019 Name _____

Instructions: This portion of the exam is to be answered based on your Excel work that you completed at home. Submit this document with your answers along with the Excel file upon which the answers are based. Part II of the exam will be completed in class.

To complete this portion of the exam, you will need the Excel file **154exam2data.xlsx** also posted in Blackboard. You should perform any calculations in Excel, and then write your answers to the bolded questions directly in the Word document. You may need to copy and paste graphs here as well.

1. Using the data on Sheet 7, Calculate a complete set of descriptive statistics for car value. Report the following below.
   a. **Mean and standard deviati**on. (6 points)

   b. **Five-number summary**. (10 points)

   c. **Range and mode**. (4 points)

2. Using the same data on Sheet 7, make a histogram of car value. Label your graph appropriately with axis labels and a descriptive title. **Describe the shape of the graph: is it symmetric, left skewed, right skewed or some other shape?** (6 points)

3. Using the same data on Sheet 7, make a boxplot. **Does the boxplot support your description of the skew or symmetry above? Explain why or why not.** (6 points)

4. **What does the $\times$ in the boxplot represent?** (3 points)

5. On Sheet 8, the number of accidents reported on the job and their likelihood is listed. Find the weighted average of this data, treating the category greater than or equal to 9 as just 9. **Report below the value you find. What is the average number of accidents reported?** (6 points)

6. On Sheet 8, **does the data provided represent a probability distribution? Explain your reasoning.** (4 points)

7. Create a simulation in Excel that will model 100 rolls of a 20-sided die whose sides are numbered 1-20. Freeze a copy of the simulation, and **report the average outcome of the rolls, and the proportion of rolls that resulted in a 9.** (6 points)

8. The standard deviation of Income is \$26,631 for a sample of 856 incomes. **Find the standard error if $\boldsymbol{SE = \frac{SD}{\sqrt{n}}}$.** (5 points)

9. The formula for the standard error for a proportion is $SE = \sqrt{\frac{p(1-p)}{n}}$. If 495 people have tried the lasagna in a sample of 856, **what is the standard error for the proportion found?** (5 points)

10. The formula for the standard score is $Z = \frac{x-\mu}{\sigma}$. The mean height of women is 64" with a standard deviation of 3.1", and the mean height of men is 70" with a standard deviation of 3.5". Richard is 5'2" and Pamela is 4'11". **Which of them is shorter for their gender? Explain.** (8 points)

Excel Work: (20 points)