

**Stat 171 - Exam 3**  
**SHOW ALL OF YOUR WORK**

**Name:** \_\_\_\_\_

1. You toss a coin until it lands head. What type of random variables are the followings:
  - (a) Number of the times you tossed the coin.
  - (b) Amount of time you spent tossing the coin.
2. The table below shows the number of tickets a police officer writes out each shift, and their probabilities.

$x$	0	1	2	3
$P(x)$	0.1	0.3	0.5	0.1

- (a) Verify that the table above represents a probability distribution.

- (b) Find the mean, variance, and the standard deviation.

3. About 20% of U.S. drivers are uninsured. You randomly select eight U.S. drivers and ask them whether they are uninsured. Find the probability that 5 of them are uninsured.

4. The annual salary for taxi drivers is normally distributed with a mean about \$30,000, and a standard deviation of \$9000. A random taxi driver is selected. What is the probability that his/her salary is more than \$20,000?

5. The annual salary for taxi drivers is normally distributed with a mean about \$30,000, and a standard deviation of \$9000. Nine random taxi drivers are selected. What is the probability that the average of their annual salary is more than \$20,000?

6. The SAT scores of students in a college is normally distributed with a mean of 510 and a standard deviation of 30. The college waives tuition for the students with SAT scores in top 10%. What is the lowest SAT score a student can have and still get the tuition waiver?

7. About 20% of U.S. drivers are uninsured. You randomly select 80 U.S. drivers and ask them whether they are uninsured. Find the probability that at most 50 of them are uninsured.

## OPTIONAL PROBLEMS

8. How many distinguishable words are there using the letters of "H A L L O W E E N".

9. The heights (in feet) and the numbers of stories of nine buildings in Houston are listed. Use a scatter plot to display the data. Describe any patterns.

<b>Height</b> (in feet)	992	780	762	756	741	732	714	662	579
<b>Number of stories</b>	71	56	53	55	47	53	50	49	40