Final Exam: Some problems for review

The Final Exam for Math 107-Section 4 will take place at **SCB 300/301** (the regular classroom) from **11 AM to 1:50 PM on Monday, December 4, 2023**. The exam will be done on Pearson's MyLab Math. You must be physically in the classroom to take the exam. Accessing the exam from elsewhere without the permission of the instructor is considered as cheating and will be given a score of 0. You are responsible for bringing your own laptop.

The material covered is Chapter 6 and 7, except for Section 7D. It is a closed book exam. A calculator (or a basic calculator app on the laptop) is allowed. Phones are not allowed. Scratched papers will be collected and considered for partial credit in case you input a wrong answer on Pearson. *The grader does not see what you put on your calculator, only what you write on your scratched papers.*

You should review the homework problems, worksheets, quizzes, examples given in the lectures. It is always a good idea to study for the exam with someone. Some more problems to practice:

1) How many different five-character passwords can be formed from the lowercase letters of the alphabet if repetition is not allowed?

2) How many 6-person lineups can be formed from a 10-player volleyball roster? (In volleyball, every player plays every position.)

3) How many different telephone numbers of the form *aaa-bbb-cccc* can be formed if the area code *aaa* can only begin with the numbers 2 through 7 and the exchange *bbb* cannot begin with 0?

4) Find the probability of being dealt a 10, jack, queen, king, and ace, all of the same suit, from a standard 52-card deck.

5) Three people will be chosen as jurors from a pool of 12 people. How many different juries are possible?

6) The price of a ticket is $1 and there is a 1 in 10 probability of winning $1, a 1 in 50 probability of winning $5, a 1 in 500 probability of winning $100, and a 1 in 1 million probability of winning $100,000. Find the expected value (to you) of a single ticket. Find the average winnings or loss expected if you purchase 1000 tickets.

7) Suppose that prices for a particular model of used car in your region are normally distributed with a mean of $15,000 and standard deviation of $1500. Answer each of the following questions.

a) About what percentage of the cars are priced between $13,500 and $16,500?

b) About what percentage of the cars are priced between $12,000 and $19,500?

c) What is the standard score of a price of $16,000, and in what percentile is that price?

d) If there is a total of 350 used cars of that model available, how many are priced below $13,000?

8) In a pre-election poll with 1600 respondents, 56% favored raising sales taxes to pay for new playground equipment. Find the margin of error and the 95% confidence interval for the poll.