Math 268
Exam 2

Name: _____

Date: _____

This exam contains 2 pages (including this cover page) and 9 questions.
Total of points is 100.

NO GRAPHING CALCULATORS ALLOWED.

Grade Table (for professor use only)

Question	Points	Score
1	9	
2	9	
3	9	
4	12	
5	12	
6	12	
7	12	
8	12	
9	13	
Total:	100	

1. (9 points) An irate patient complained that the cost of a doctor's visit was too high. She randomly surveyed 20 other patients and found that the mean amount of money they spent on each doctor's visit was $44.80. The standard deviation of the sample was $3.53. Find the 95% confidence interval of the population mean. Assume the variable is normally distributed.

2. (9 points) In a study of 150 randomly selected accidents that required treatment in an emergency room, 36% involved children under 6 years of age. Find the 90% confidence interval of the true proportion of accidents that involve children under the age of 6.

3. (9 points) Find the 90% confidence interval for the variance and standard deviation for the time it takes a state police inspector to check a truck for safety if a random sample of 27 trucks has a standard deviation of 6.8 minutes. Assume the variable is normally distributed.

4. (12 points) A real estate agent believes that the average closing cost of purchasing a new home is $6500 over the purchase price. She selects 40 new home sales at random and finds that the average closing costs are $6600. The standard deviation of the population is $120. Test her belief at $\alpha = 0.05$.

5. (12 points) A recent study in a small city stated that the average age of robbery victims was 63.5 years. A random sample of 20 recent victims had a mean of 63.7 years and a standard deviation of 1.9 years. At $\alpha = 0.05$, is the average age higher than originally believed? Use the P-value method.

6. (12 points) A magazine claims that 75% of all teenage boys have their own radios. A researcher wished to test the claim and selected a random sample of 60 teenage boys. She found that 54 had their own radios. At $\alpha = 0.01$, should the claim be rejected?

7. (12 points) A bottling company claims that the variance of the amount of sports drink in a 12-ounce bottle is no more than 0.40. A random sample of 31 bottles has a variance of 0.75. At $\alpha = 0.01$, is there enough evidence to reject the company's claim? assume the population is normally distributed.

8. (12 points) A researcher wishes to see if there is a difference in the cholesterol levels of two groups of men. A random sample of 30 men between the ages of 25 and 40 is selected and tested. The average level is 223. A second random sample of 25 men between the ages of 41 and 56 is selected and tested. The average of this group is 229. The population standard deviation for both groups is 6. At $\alpha = 0.01$, is there a difference in the cholesterol levels between the two groups?

9. (13 points) In a random sample of 80 workers from a factory in city A, it was found that 5% were unable to read, while in a random sample of 50 workers in city B, 8% were unable to read. Can it be concluded that there is a difference in the proportions of nonreaders in the two cities? Use $\alpha = 0.10$. Find the 90% confidence interval for the difference of the two proportions.