Extra Homework for Exam # 3

1) Given the information: the sampled population is normally distributed, n =55, $\bar{x} = 78.2$, $\sigma = 12$
a) Find the 0.98 (or 98%) confidence interval for μ.
b) Are the assumptions satisfied? Explain why.

2) A sample of 60 night school students' age is obtained in order to estimate the mean age of night school students. $\bar{x} = 25.3$ years. The population variance is 16
a) Find the 0.95 (or 95%) confidence interval for μ.
b) Find the 0.99 (or 99%) confidence interval for μ.

3) How large a sample should be taken if the population mean is to be estimated with 99% confidence to within $75? The population has a standard deviation of $900.

4) By measuring the amount of time it takes a component of a product to move from one work station to the next, an engineer has estimated that the standard deviation is 5 sec.
a) How many measurements should be made in order to be 95% certain that the maximum error of estimation will not exceed 1sec?
b) What sample size is required for a maximum error of 2 sec?

5) For a particular age group of adult males, the distribution of cholesterol readings in mg/dl, is normally distributed with a mean of 210 and a standard deviation of 15.
a) What percentage of the population will have readings exceeding 250?
b) What percentage would have readings less than 150?

6) The waiting time x at a certain bank is approximately normally distributed with a mean of 3.7 minutes and a standard deviation of 1.4 minutes.
a) Find the probability that a randomly selected customer has to wait less than 2 minutes.
b) Find the probability that a randomly selected customer has to wait more than 6 minutes.
c) Find the value of the 75^{th} percentile for x.

7) A brewery machine is adjusted to fill quart bottles with a mean of 32.0 oz of ale and a variance of 0.003. Periodically, a bottle is checked and the amount of ale is noted.
a) Assuming the amount of fill is normally distributed, what is the probability that the next randomly checked bottle contains more than 32.02 oz?
b) Let's say you buy 100 quart bottles of this ale for a party; how many bottles would you expect to find containing more than 32.02oz of ale?

8) Complete the following table given α

Area, α	0.10	0.05	0.025	0.005	0.98
Z_α					

9) Assume that women's heights are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. If 90 women are randomly selected, find the probability that they have a mean height between 62.9 inches and 64.0 inc