

Name  
Date

**MAT 330-Introduction to Statistics**  
**Assignment #8**

1. For a continuous random variable  $x$ , the population mean and the population standard deviation are 82 and 18, respectively. You take a simple random sample of 25 elements from this population. The mean of the sampling distribution of the sample mean is:
2. The daily sales at a convenience store have a mean of \$1280 and a standard deviation of \$172. Assuming  $\alpha \leq 0.05$ , the standard deviation of the sampling distribution of the mean sales of a sample of 16 days for this convenience store, rounded to two decimal places, is:
3. A population has a mean of 98.2 and a standard deviation of 25.2. Assuming  $\alpha \leq 0.05$ , the probability, rounded to four decimal places, that the sample mean of a sample of size 89 elements selected from this population will be between 91 and 97 is:
4. The time spent commuting from home to work for all employees of a very large company has a normal distribution with a mean of 43.4 minutes and a standard deviation of 12.1 minutes. The probability, rounded to four decimal places, that the mean time spent commuting from home to work by a sample of 21 employees will be between 43.26 and 49.35 minutes is:
5. A class of 61 students has 15 seniors. The proportion of students in this class who are seniors, rounded to three decimal places, is:
6. Use the following to answer questions (a)-(b):  
  
Forty percent of all students at a large university live on campus. Suppose you extract a sample of 115 students from this university. The sample proportion is the proportion of students in this sample who live on campus.

- (a) The mean of the sampling distribution of this sample proportion is:
- (b) The standard deviation of the sampling distribution of this sample proportion, rounded to four decimal places, is:
7. The number of hot dogs sold per game at one concession stand at a baseball park is normally distributed with  $\mu = 23,750$  and  $\sigma = 106$ . You select 13 games at random, and the mean number of hot dogs sold,  $\bar{x}$ , is denoted. What is the standard deviation of  $\bar{x}$ , rounded to three decimal places?
8. A company has 15,000 employees and 10,800 of them have completed a particular training course. Management decides to choose a random sample from all employees. What is the minimum number of employees that must be in the sample in order to use the Central Limit Theorem to approximate the distribution of the proportion in the sample who have taken the training course?
9. A continuous random variable  $x$  has a normal distribution with a mean of 51 and a standard deviation of 26. The sampling distribution of the sample mean for a sample of 16 elements has what mean and standard deviation?
10. Suppose the number of books consulted by a student last weekend has distribution

$\bar{x}$	Probability
0	0.20
1	0.60
2	0.20

Let  $X_1$  and  $X_2$  be independent and each have the same distribution as the population.

Determine the missing elements in the table for the sampling distribution of:

$$\bar{X} = (X_1 + X_2) / 2.$$

$\bar{x}$	Probability
0.0	0.0400
0.5	
1.0	
1.5	
2.0	0.0400