Section 1 (See Example 1 & GW1)

1. The mean room and board expense per year at a four-year college is $5,850. Assume that the room and board expenses are normally distributed with a standard deviation of $1125.
a) You randomly select 9 four-year colleges. What is the mean and standard deviation for the mean room and board charges for a sample size of 9?
b) What is the probability that the mean room and board of the nine colleges is less than $6,180?
c) What is the probability that the mean room and board of the nine colleges is more than $5,250?

2. The scores of students on the ACT college entrance examination in a recent year had the normal distribution with mean of 20.4 and a standard deviation of 5.8.
a) What is the probability that a randomly selected student scored 24 or higher on the ACT? (Note: this sample size is 1)
b) What are the mean and standard deviation of the average ACT score for a random sample of 30 students?
c) What is the probability that the average ACT score for a group of 30 randomly chosen students is 24 or higher?

Section 2 (Example 2 & GW2)

3. Math Horizons is a publication of the Mathematical Association of America. The 1996 issue reports that in the United States, graduating mathematics majors who have also studied actuarial science (including some statistics) have an average first-year salary of $31460. Suppose that a random sample of 36 such recent graduates in the Denver/Boulder region show that they were earning an average of $31800 with a standard deviation of $915. Does the data indicate that the mean salary in the Denver/Boulder area is higher than the national average? Use $\alpha = .05$.
4. On a college entrance exam, the mean score is 500, while the standard deviation is 100. A high school principal boasts better than average scores for her graduates. To support this claim, she randomly selects 75 graduates and determines that the mean score for this sample is 515. Is her claim actually supported by the sample data? Let = .05.

Section 3 (Example 3 & GW3)

5. The personnel department of a large corporation would like to estimate the family dental expenses of its employees in order to determine the feasibility of providing a dental

insurance plan. A random sample of 10 employees revealed the following expenses in the previous year:

$110 $363 $246 $85 $510 $208 $173 $425 $316 $179

Set up a 98% confidence interval to estimate the average annual dental expenses for families at this company.