Practice Problems 7: *Confidence Intervals*

A. From your Book:

- Units 6.1 & 7.1

B. Additional Problems:

1. The average weight of 40 randomly selected minivans was 4150 pounds. The standard deviation was 480 pounds. Find the 99% confidence interval of the true mean weight of the minivans.

2. A recent study of 75 workers found that 53 people rode the bus to work every day. Find the 70% confidence interval for the proportion of all workers who rode the bus to work.

3. A researcher wishes to estsimate within $300 the true average amount of money a county spends on road repairs each year. If she wants to be 90% confident, how large a sample is necessary? The standard deviation is known to be $900.

4. A random sample of 49 shoppers showed that they spend an average of $23.45 per visit at the Saturday Mornings bookstore. The standard deviation of the sample was $2.80. Find the 90% confidence interval of the true mean.

5. A simple random sample of 4,382 students found that they spent $128.75 on average on textbooks. The **sample** standard deviation was $75.23.

    (a) Calculate the standard error for this sample mean.
    (b) Calculate a 95% confidence interval for the average amount spent on textbooks.

6. (a) Find the 95% confidence interval for μ if we have 376 independent normal observations with a sample mean $\bar{x} = 10{:}86$ and a sample standard deviation s $= 2.578$.

    (b) Find the 90% confidence interval for μ if we have 128 independent normal observations with a sample mean $\bar{x} = 1; 280$ and sample standard deviation s $= 67.2$.

    (c) Find the 98% confidence interval for μ if we have 1237 independent normal observations with a sample mean of $\mu = 12.6$ and a sample standard deviation s $= 6.4$.

7. A simple random sample of 687 California registered voters found that 78% planned to vote in the presidential election.

    (a) What is the population for this survey?
    (b) Give a 99% confidence interval for the proportion of California voters that are planning to vote.
    (c) Calculate the largest margin of error that could result from a sample of 687 people.