

22s:039
Homework 10

Assigned Friday, November 6
Due Friday, November 13

Chapter 8: Confidence Intervals for μ or p

For each problem, provide the solution and any work that can be used for partial credit.

Book problems:

8-1 Do only part *a*.

8-31

8-52

Also, for each problem, provide the solution and any work that can be used for partial credit.

1. The diameter of holes for a cable harness is known to have a normal distribution with $\sigma = 0.01$ inch.
 - (a) A random sample of size 10 yields an average diameter of 1.5045 inch. Find a 99% confidence interval on the mean hole diameter.
 - (b) How large of a sample would need to be taken to ensure that a 95% confidence interval on μ has a full width of at most 0.002?
2. The following are two confidence intervals for μ calculated from the same sample.

$$3124.9 \leq \mu \leq 3215.7 \quad \text{and} \quad 3110.5 \leq \mu \leq 3230.1$$

- (a) What was the sample mean?
- (b) One of them is a 95% confidence interval and one of them is a 99% confidence interval. Which is the 95% confidence? Explain.

3. An Izod impact test was performed on 20 specimens of PVC pipe. The sample mean is $\bar{x} = 1.25$ and the sample standard deviation is $s = 0.25$. Find a 95% confidence interval for μ . (You can assume the distribution of test values is normal).

4. The 2004 presidential election exit polls from the critical state of Ohio provided the following results. There were 2020 respondents in the exit polls and 768 were college graduates. Of the college graduates, 412 voted for George Bush. Calculate a 95% confidence interval for the proportion of college graduates in Ohio that voted for George Bush.

5. A study is to be conducted of the percentage of homeowners who own a Tivo. How large a sample is required if we wish to be 99% confident that the error in estimating this quantity is less than 0.017? .