

Unit 6 – Estimation
Week #9 - Practice Problems

Due Monday November 24, 2008

The results of IQ tests are known to be normally distributed. Suppose that in 2007, the distribution of IQ test scores for persons aged 18-35 years has a variance $\sigma^2 = 225$. A random sample of 9 persons take the IQ test. The sample mean score is 115.

1. *Before you begin: This exercise gives you practice calculating a confidence interval for the mean of a Normal distribution in the setting where the variance parameter is known.. See lecture notes pp 17-21*

Calculate the 50%, 75%, 90% and 95% confidence interval estimates of the unknown population mean IQ score.

2. *Before you begin: This exercise is asking you to think about, and compare, two aspects of the concept of a confidence interval: (1) its width, and (2) the level of confidence that we attach to the interval we are reporting. Hint – precision v confidence...*

What trade-offs are involved in reporting one interval estimate over another?

3. *Before you begin: This exercise is reminder of some of the ideas of sampling distributions. It is asking you to compute a probability for a sample mean. It's actually drawing upon material presented in Unit 5, The Normal distribution. Thus, see lecture notes for Unit 5, specifically page 22*

If it is known that the population mean IQ score is $\mu = 105$, what proportion of samples of size 6 will result in sample mean values in the interval [135,150]?