STATISTICS FOR ECONOMISTS

Class Exercise 3.

These questions are all about confidence intervals – for means and proportions, for large and small samples, and for the differences between means and proportions. See Barrow for more.

1. Given the sample data $\bar{x}=40$, s=10 and n=36 calculate the 95% confidence interval estimate of the true mean. If the sample size were 20, how would the method of calculation and width of the interval be altered?

2. Given the sample data p=0.4, n=50 calculate the 99% confidence interval estimate of the true population proportion. [p is the sample proportion].

3. A random sample of 100 record shops found that the average weekly sale of a particular CD was 260 copies, with a standard deviation of 96. Find the 95% confidence interval to estimate the true average sale for all shops.

4. Given the sample data $\bar{x}_1=25$, $s_1=12$, $n_1=80$ and $\bar{x}_2=22$, $s_2=18$, $n_2=100$, estimate the true difference between the means with 95% confidence.

5. 67% out of 150 pupils from school A passed an exam, 62% of 120 pupils at school B passed. Estimate the 99% confidence interval for the true difference between the proportions passing the exam.

6. Two samples were drawn, each form a normally distributed population, with the following results:

    $\bar{x}_1=45$, $s_1=8$, $n_1=12$ and $\bar{x}_2=52$, $s_2=5$, $n_2=18$.

    Estimate the difference between the population means using the 95% confidence level.