Estimation

1. A random sample of size 36 from a finite population consisting 101 units. If the population standard deviation is 12.6, find the standard error od sample mean when the sample is drawn

a) with replacement b) without replacement

2. If sample mean is 20, population standard deviation is 3 and sample size is 64, find the interval estimate of the population mean. (α =5%)

3. Systolic blood pressure of a sample of 400 males was taken. Sample mean blood pressure was found to be 128 mm and standard deviation 13.05 mm. Find 95% confidence limits of blood pressure within which the population mean would lie?

4. From a population of 540, a sample of 60 individuals is taken. From this sample, the mean is found to be 6.2 and standard deviation 1.368,

a) Find the estimated standard error of the mean
b) Construct a 95% confidence interval for the mean.

5. A random sample of 500 oranges was taken from a large consignment and it was observed that 65 were found to be bad. Find the standard error of proportion of bad oranges.

6. Out of 300 households in a town 123 have T.V. sets. Find 95% confidence limits to the value of the proportion of the households with T.V. sets in the whole town.

7. 400 oranges are taken from a large consignment and 50 of them are found to be bad. Estimate the percentage of the bad oranges in the consignment and assign 95% limits within which the percentage lies.

8. In a survey, 200 people were asked to identify their major sources of news information; 110 stated that their major source was television news.

a) Construct a 95% confidence interval for the proportion of the people in the population who consider television their major source of news information.
b) What happens to the width of a confidence interval as the confidence level is increased?
c) What happens to the width of a confidence interval as the sample size is increased?

Sample Size

1. In a study of time and motion in a factory, the supervisor estimated the S.D. to be 0.95 seconds. If you want to be 95% confident that the error will not exceed 0.01 second. What should be the size of the sample to estimate population mean?

2. The mean and standard deviation of a random sample of 49 were found to be 100 and 10 respectively. If the investigator wants to be 95% confident that the error in estimate of a population mean should not exceed 2 how many additional observations are required?

3. Potato chips distributor wants to estimate average monthly sales of its product. If the standard deviation is Rs. 12, find the sample size if the maximum error is not more than Rs. 3 with 99% level of confidence.

4. It is desired to estimate the proportion of junior executives who change their first job within the first five years. This proportion is to be estimate within 3% error and 0.95 degree of confidence is to be used. A random study conducted several years ago revealed that 30% of such junior executives changed their first job within 5 years.

a) How large a sample is required to update the study?
b) How large should the sample be if no such previous estimates are available?