Tutorial 2: Z Test

Large Sample Test (Z test)

Tests for Mean:

1.Test of Significance of the difference between sample mean and population mean.

2. Test of Significance of the difference between the means of two samples.

1. A Sample of 900 members has a mean 3.4cm and standard deviation 2.61cm . Is the sample from a large population of mean 3.25cm and standard deviation 2.61cms?(Test at 5% level of significance)

2. The average marks scored by 32 boys are 72 with SD of 8, while that for 36 girls is 70 with SD of 6. Test at 1% LOS whether the boys perform equal as girls.

3. The average of marks scored by 32 boys is 72 with SD 8, while that of 36 girls is 70 with SD 6. Test the 1% level of significance whether the boys perform better than the girls.

4. The mean of two samples of sizes 1000 and 2000 resp. are 67.50 and 68.0 inches. Can the samples be regarded as drawn from the same population of SD 2.5 inches?

5. A random sample of 900 members is found to have a mean of 3.4 cm. Can it be reasonably regarded as a sample from a large population whose mean is 3.25 cm and whose SD is 2.61cms?

6. The mean lifetime of a sample of 100 light tubes produced by a company is found to be 1580 hours with standard deviation of 90 hours. Test the hypothesis that the mean lifetime of the tubes produced by the company is 1600 hours.

7. A sample of 100 students is taken from a large population. The mean height of the students in this sample is 160cm. Can it be reasonably regarded that this sample is from a population of mean 165 cm and S.D 10 cm? Also find the 95% fiducial limits for the mean.

8. A sample of 900 members has a mean 3.4 cm and S.D 2.61 cm. Is the sample from a large population of mean 3.25 cm and S.D 2.61 cm. If the population is

normal and the mean is unknown, find the 95% confidence limits for the mean. $\frac{\sigma_2}{n_2}$

9. The buyer of electric bulbs bought 100 bulbs each of two famous brands. Upon testing these he found that brand A had a mean life of 1500 hours with a standard deviation of 50 hours whereas brand B had a mean life of 1530 hours with a standard deviation of 60 hours. Can it be concluded at 5% level of significance, that the two brands differ significantly in quality?

10. Intelligence test given to two groups of boys and girls gave the following information

	Mean Score	S.D	Number
Girls	75	10	50
Boys	70	12	100

Is the difference in the mean scores of boys and girls statistically significant

11. A simple sample of heights of 6400 Englishmen has a mean of 170 cm and S.D of 6.4 cm, while a simple sample of heights of 1600 Americans has mean of 172 cm and S.D of 6.3 cm. Do the data indicate that Americans are on the average taller than Englishmen's?
12. In a certain factory there are two independent processes manufacturing the same item. The average weight in a sample of 250 items produced from one process is found to be 120 Ozs, with a s.d of 12 Ozs, while the corresponding figures in a sample of 400 items from the other process are 124 Ozs and 14 Ozs. Is the difference between the two sample means significant? Also find 99% confidence limit

13. .Random samples drawn from two places gave the following data relating to the heights of male adults:

	Place A	Place B
Mean Height (in Inches)	68.5	65.5
S.D (in Inches)	2.5	3
No. Of Adult males in sample	1200	1500

Test at 5% level of significance that the mean height is the same for adults in the two places.