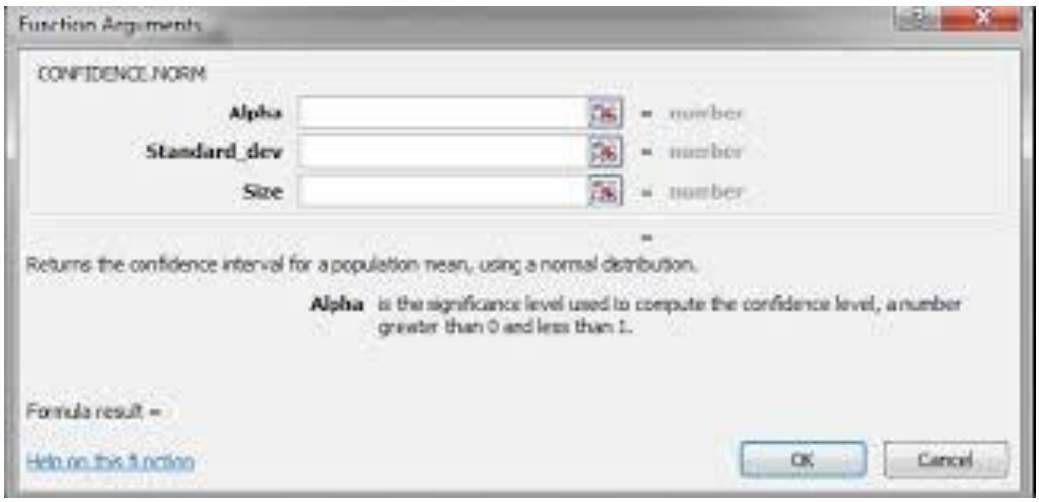
Practical Session 11

Confidence intervals

In this session, we shall see how to illustrate how to use Excel to calculate confidence intervals for a mean and a proportion. You can use the following functions to solve some of the exercises for this week. Check what happens in one example when you increase the level of confidence from 90 to 95 to 99%.

1. Confidence interval for a mean (large sample or known variance).

   The basic function we need to use is CONFIDENCE.NORM (INTERVALO.CONFIANZA.NORM). In Excel 2007 or older, the function CONFIDENCE (INTERVALO.CONFIANZA) will give the same results.



   The syntax is = **CONFIDENCE.NORM(alpha;Standard_dev;Size)** where **Size** and **Standard_dev** are the sample size and sample standard deviation and **alpha** is the significance level associated with the confidence level. Thus, for a 90% interval, we set alpha = (1-0.9) = 0.1, for a 95% interval, alpha = (1-0.95) = 0.05 and for a 99% interval, alpha = (1-0.99) = 0.01.

   You only need to remember to subtract (add) the result of this calculation to the sample mean in order to calculate the left (right) hand sides of the confidence interval.

2. Confidence interval for a mean (small sample).

   For a small sample, (N < 30) we should use a Student's t interval instead of a normal interval. This can be done in recent versions of Excel via the function CONFIDENCE.T (INTERVALO.CONFIANZA.T). This syntax and interpretation of this function is exactly the same as for **CONFIDENCE.NORM**.

3. Confidence interval for a proportion.

   In this case, we use **CONFIDENCE.NORM**, but setting the standard deviation as **SQRT**(phat*(1-phat)) where phat is the cell containing the sample proportion. (In Spanish, we use **RAIZ**).