CONFIDENCE INTERVALS

*This test is used to calculate to a confidence interval for a population mean when **σ is known**.*

The distribution of the systolic blood pressure of adult males is approximately normal with σ = 9.3 mmHg. Systolic readings are taken from a SRS of 27 adult males where $\bar{x}$ = 114.9 mmHg.

Construct a 99% confidence interval for the mean systolic blood pressure of all adult males.

P)   IDENTIFY POPULATION PARAMETER:

μ = mean systolic blood pressure of all adult males

A)   VERIFY CONDITIONS REQUIRED FOR TEST:

a)   SRS

b)   Normal distribution

c) $N > 10n > 10(27) > 270$

I)   CONSTRUCT INTERVAL USING:

a)   **TABLE C:**

i)   Put data into list and calculate sample mean:

$$\bar{x} = 114.9$$

ii)   Determine z* from Table C and calculate interval:

$$\mu = \bar{x} \pm z\left(\frac{\sigma}{\sqrt{n}}\right) = (110.3, \ 119.5)$$

b)   **CALCULATOR:**

STAT ---> TESTS ---> 7:ZInterval = (110.3, 119.5)

S)   STATE CONCLUSION:

Based on our method, we are 99% confident that the interval from 110.3 mmHg and 119.5 mmHg will *capture* the mean blood systolic blood pressure of all adult males.

NOTE: Do <u>not</u> say "the probability is 99% that the mean blood pressure lies between 110.3 and 119.5". Either the mean does or does not lie within this interval!