

## Answer on Question #46487 – Math – Statistics and Probability

### Problem.

A random sample of size 10 from a normal population gives the values, 64, 72, 65, 70, 68, 71, 65, 62, 66, 67.

If it is known that the standard error of the sample mean is  $\sqrt{0.64}$ , find the 95% confidence limits for the population mean. Also find the population variance.

### Solution:

The mean of this sample equals  $\bar{x} = \frac{64+72+65+70+68+71+65+62+66+67}{10} = 67$ .

For 95% confidence interval  $z^* = 1.96$ .

The confidence limits for the population mean are equal to  $\bar{x} \pm z^* \cdot SE$  ( $SE = \sqrt{0.64} = 0.8$ ) or 65.432 and 68.568.

$$SE = \frac{\sqrt{\text{Var}}}{\sqrt{n}},$$

so the population variance equals  $\text{Var} = nSE^2 = 6.4$ .

**Answer:** confidence limits for the population mean are 65.432 and 68.568; the population variance equals  $\text{Var} = 6.4$ .