

SOLUTIONS: STATISTICAL INFERENCE
One-Sample Z-test and Confidence Intervals (Two-sided)

PROBLEM 1: A company manufactures batteries for watches. A random sample of 144 batteries is taken and the sample mean life is 5.5 years with a standard deviation of 0.6 years. If you were constructing a 99% two-sided confidence interval estimate, the lower limit would be:

Answer: 5.37 years

PROBLEM 2:

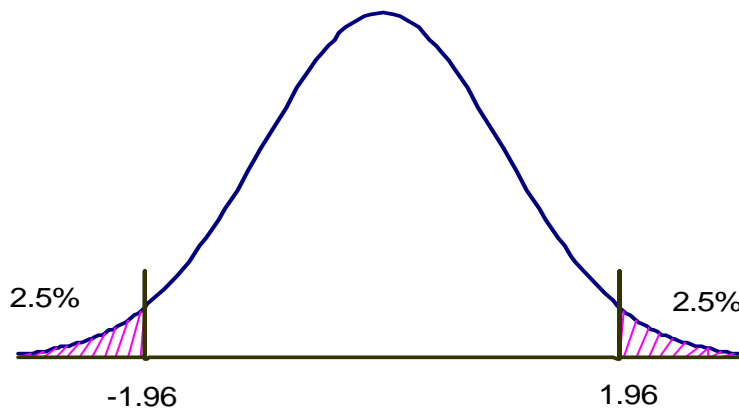
A company wishes to determine if the average salary of its clerks is really \$340. The company researcher takes a sample of 64 clerks and finds that $\bar{X} = \$300$ and $s = \$80$.

a) Test at $\alpha = 0.05$.

b) Construct a 95% CIE of μ

$H_0: \mu = \$340$

$H_1: \mu \neq \$340$



$$Z = \frac{300 - 340}{80 / \sqrt{64}} = \frac{-40}{10} = -4 \quad \text{REJECT } H_0$$

Therefore, reject H_0 at $p < .05$

As a 95%, CIE:

$$300 \pm \frac{80}{\sqrt{64}} = 300 \pm 1.96(10) = 300 \pm 19.6$$

\$280.40 \longleftrightarrow \$319.60

[NOTE: 340 is not in this interval.]