

## Answer on Question #57460 – Math – Statistics and Probability

### Question

A production process is considered in control if no more than 6% of the items produced are defective. Samples of size 300 are used for the inspection process.

What is the standard error of the population in this case?

What is the upper control limit?

What is the lower control limit?

### Solution

$$\text{Standard error } SE = \sqrt{\frac{p(1-p)}{n}} = \sqrt{\frac{0.06 \cdot 0.94}{300}} \approx 0.0137.$$

$$\text{Upper control limit } UCL = p + 3SE = 0.06 + 3 * 0.0137 = 0.1011.$$

$$\text{Lower control limit } LCL = p - 3SE = 0.06 - 3 * 0.0137 = 0.0189.$$

**Answer: 0.0137; 0.1011; 0.0189.**