Warm-up

Name at least two ways that the margin of error in a confidence interval can be decreased.

r

Finding a Confidence Interval

$\bar{x} \pm z^* \frac{\sigma}{\sqrt{n}}$

We take a sample of 24 Coca-cola cans and find they contain a mean of 11.9 ounces of soda. The standard deviation of the population of all cans is 0.08 ounces. Find a

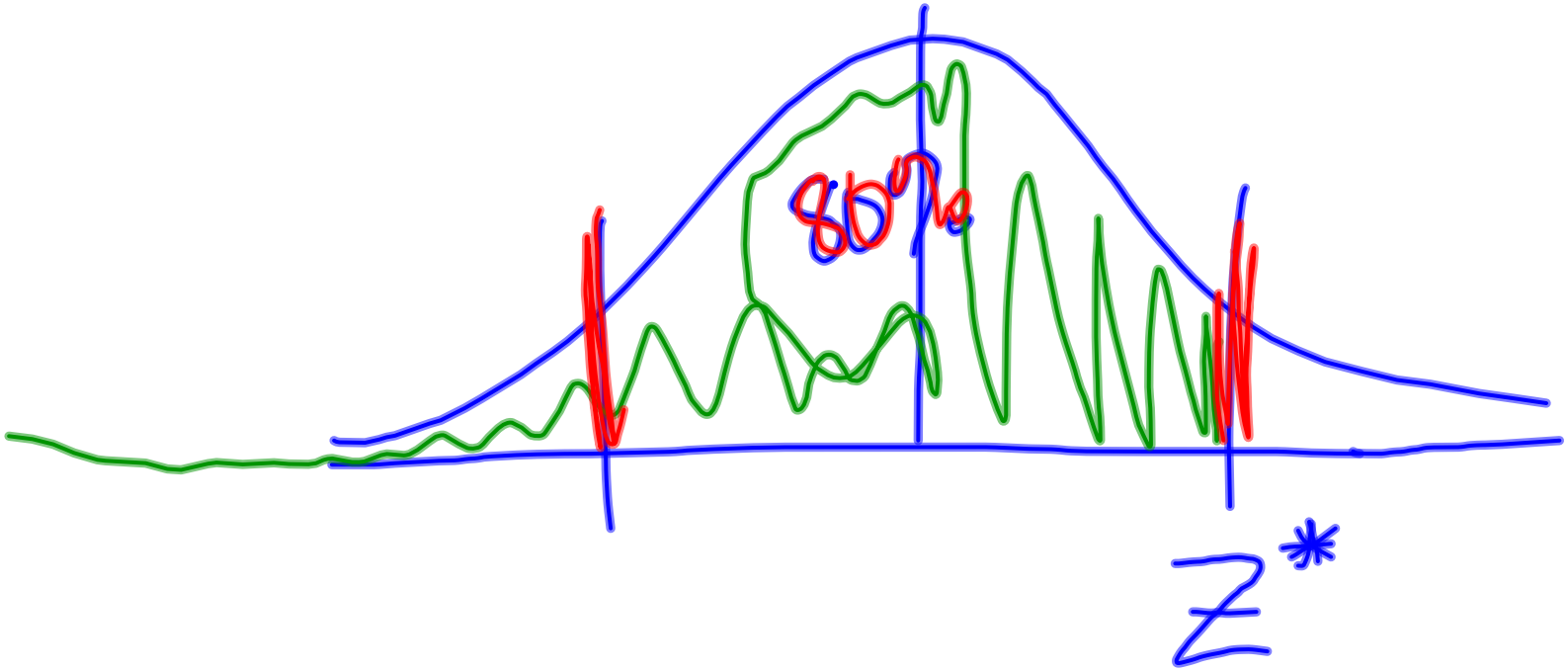
μ pop

$\bar{x}$ samp

80% C.I. $11.9 \pm 1.282 \frac{.08}{\sqrt{24}}$ $(11.879, 11.9209)$

90% C.I. $(11.873, 11.927)$

95% C.I.



invNorm(.9)

Choosing Sample Size

$MOE = z^* \frac{\sigma}{\sqrt{n}}$

We want to be able to estimate the GPA to within _____ points. The population has a standard deviation of 0.7. Level of confidence is 95%. $z = 1.960$

within 0.5

~~within 0.2~~

within 0.1

$\sqrt{n} \cdot .5 = 1.96\left(\frac{.7}{\sqrt{n}}\right) \cdot \sqrt{n}$

$\frac{\sqrt{n} \cdot .5}{.5} = \frac{1.96(.7)}{.5}$

$\sqrt{n}^2 = \left(\frac{1.96(.7)}{.5}\right)^2$

$n = \left(\frac{1.96(.7)}{.5}\right)^2$ → $n = 7.53$ → $n = 8$

$n = 188.2$

$n = 189$

Exit Task

How are the Confidence Level and Confidence Interval Width related?