

Assume that a sample is used to estimate a population proportion p . Find the 99.5% confidence interval for a sample of size 323 with 14% successes. Enter your answer as an **open-interval** (i.e., parentheses) using decimals (not percents) accurate to three decimal places.

$$\begin{aligned} \text{Sample size } n &= 323 \\ \text{Confidence interval} &= 99.5\% = 0.995 \\ \text{Now sample size } 323 \text{ with } 14\% \text{ successes} \\ \text{so } x &= 14\% \text{ of } 323 \\ &= 0.14(323) \\ &= 45.22 \approx 45 \end{aligned}$$

$$x = 45$$

$$\begin{aligned} \text{Now to find open interval,} \\ 1 - \text{prop z interval } \left(\frac{x}{n}, \text{confidence level} \right) \\ \left(\frac{45}{323}, 0.995 \right) \\ = (0.08523, 0.193) \end{aligned}$$