

Instructions: Show all work. Round your answers to three decimal places.

1. The formula for the margin of error for proportions is $E = z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}}$. Find a 95% confidence interval for a sample proportion of 0.64, with a sample size of 32.

$$E = 1.96 \sqrt{\frac{.64 * .36}{32}} = .166$$

$$.64 - .166 = .474$$

$$.64 + .166 = .806$$

$$(.474, .806)$$

2. Suppose you are polling a presidential race and have reason to think the election is close to evenly split. You'd like to conduct a poll to test this and want your margin of error (for a 95% confidence interval) to be under 2%. Calculate the number of people you would need to poll to obtain this result. Use $\hat{p} = 0.5$, and $n = \frac{z_{\alpha/2}^2 \hat{p}\hat{q}}{E^2}$.

$$n = \frac{1.96^2 \cdot .5 \cdot .5}{.02^2} = 2401$$