

Name: _____

Sheet 913: Confidence Intervals

1. We use a confidence level of 95%. What does a confidence interval mean? What does a 95% confidence interval mean? You can explain in terms of an athlete's performance and ability if you wish.

In the following, express your answers both in the \pm form and the low to high form. E.g., "The confidence interval is 100 ± 10 or 90 to 110."

2. You call 1,000 people and find the proportion of people who say yes to a question. If $\hat{p} = 0.3$ (meaning that 30% said yes), find the 95% confidence interval.

What does the interval mean?

3. A player throws 500 times and succeeds for 350 of them. Find the 95% confidence interval.
4. The mean and standard deviation are 100 and 10, respectively. If 10,000 data points were used, what is the 95% confidence interval?
5. Calculate the 95% confidence interval for these hypothetical data: 2, 4, 5, 7, 9, 11, 15.
6. In a poll, how many people do you have to call to get the confidence interval 0.50 ± 0.03 ? That is, $\pm 3\%$ like in election phone polls. We have assumed that the poll result is 50% (or near 50%). You need to solve for n . Use a confidence level of 95%.
7. Using the 68%-95%-99.7% rule, some figuring out, and—for parts c and d—the table of z-values, find these confidence interval for each of these confidence levels. Assume a mean of 500.0, a standard deviation of 100, and 10,000 subjects. Answer to one decimal (e.g. 500.1).
 - a) 95% confidence level.
 - b) 99.7 confidence level.
 - c) 90% confidence level.
 - d) 99% confidence level.