**Notes to find a 95% confidence interval:**

In a survey of 40 randomly selected people, 24 reported that they are scared of snakes. Create a 95% confidence interval of all people that are afraid of spiders.

1. Find p (percent of people afraid) p=24/40 = 60% or .6
2. Find standard deviation: $\sqrt{\frac{p\left(1-p\right)}{n}}=\sqrt{\frac{.6\left(1-.6\right)}{40}=.077459= .078 or 7.8\%}$
3. 95% confidence interval $p\pm 2\left(SD\right)= 60\%\pm 2\left(7.8\%\right)$
4. Evaluate: 44.4% - 75.6% We are 95% confident that the true proportion of all people that are scared of spiders is between 44.4% and 75.6%.

In a survey of 40 randomly selected people, the average amount of calories they ate in a day is 2420 and the standard deviation was 420 calories.

1. Find standard deviation of averages of 40 people: $\frac{SD}{√n}= \frac{420}{√40}=66.41$
2. 95% confidence interval $average\pm 2\left(SD\right)= 2420\pm 2\left(66.41\right)$
3. Evaluate: 2287.18 - 2552.81. We are 95% confident that the true number of all people eat between 2287.18 - 2552.81 calories a day.