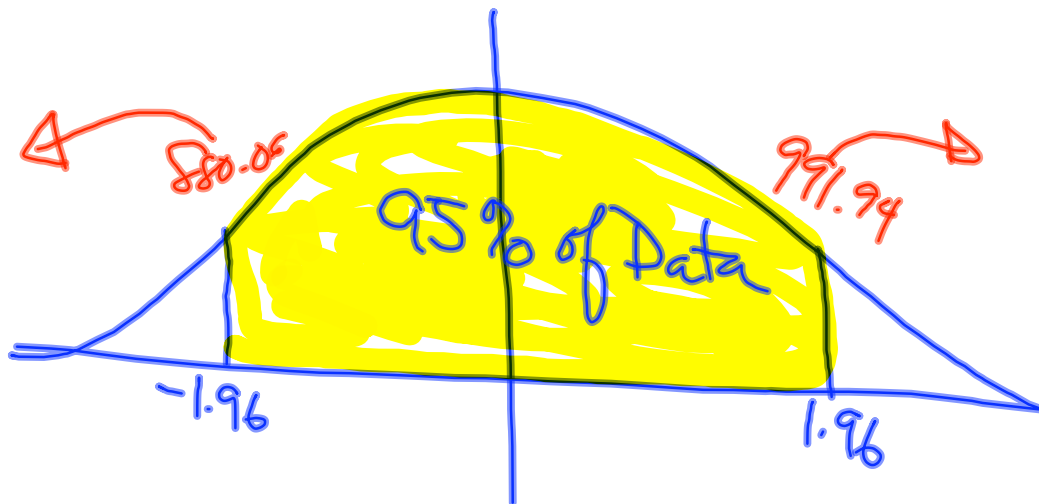


## 95% Confidence Intervals

Read Pg. 134

Complete Investigation Pg.135



**Example 1:**

The local soccer club is selling tickets in a raffle to help fund their trip to the national championships. They need to sell 750 tickets to cover the cost of the prizes. There are 7200 people in the town and on average 13% of them buy tickets on raffles.

a) Construct the 95% confidence interval for the number of people that will buy raffle tickets.

$$\mu \pm 1.96\sigma$$

$$\begin{aligned}\mu &= n \times p \\ \mu &= 7200 (0.13) \\ \mu &= 936\end{aligned}$$

$$\begin{aligned}\sigma &= \sqrt{n \times p \times (1-p)} \\ \sigma &= \sqrt{7200 (0.13) (1-0.13)} \\ \sigma &= 28.54\end{aligned}$$

$$\mu - 1.96\sigma$$

$$936 - 1.96(28.54)$$

$$880.06$$

always round down  
880

$$\mu + 1.96\sigma$$

$$936 + 1.96(28.54)$$

$$991.94$$

always round up 992.

We are 95% confident that between 880 and 992 people will buy raffle tickets.

b) Will the soccer club cover their costs?

**Example 2:**

Sarah surveyed 300 people at the mall and found that 74% of these people had had a cavity filled within the last year.

Construct the 95% confidence interval

$$\mu = 300 (0.74)$$

$$\mu = 222$$

$$\sigma = \sqrt{300 (0.74) (1-0.74)}$$

$$\sigma = 7.60$$

$$222 - 1.96 (7.60)$$

$$207$$

$$222 + 1.96 (7.60)$$

$$237$$

$$Pg. 139 \quad 3-6, 7a$$