**5.4 Confidence Interval for Means**

“The survey determined that 76% of people have a Facebook account. The results are accurate within plus or minus 4% points, 19 times out of 20.”

**Margin of error –**

**Confidence interval –**

**Confidence level –**

Ex. An advertisement for a new toothpaste states that 64% of users reported better dental checkups. The results of the poll are accurate within 3.4 percent points, 9 times out of 10.

1. State the confidence level.
2. Determine the confidence interval.
3. If all 32 students in a mathematics class used this toothpaste, determine the range of the mean number of classmates who could expect better checkups.

**Confidence Level Theorem**

Ex. Suppose we want to estimate the average weight of an adult male in Dekalb County, Georgia. We draw a random sample of 1,000 men from a population of 1,000,000 men and weigh them. We find that the average man in our sample weighs 180 pounds, and the standard deviation of the sample is 30 pounds. What is the 95% confidence interval?