

## **Worksheet for Confidence Intervals and Sample Size calculations**

It is known that the standard deviation in the volumes of 24-ounce (710-mL) bottles of natural spring water bottled by a particular company is 6 mL. Ninety bottles are randomly sampled and measured and yielded a mean volume of 708 mL.

Find a 98% confidence interval for the true population mean to check if the bottling process still is on target.

Interpretation:

The description of the problem did not make any statement about the distribution of the bottle volumes? Why or why not would this be a concern?

The president of the Bona Fide Washing Machine Company (BFWMC) tells the firm's statistician that it is important he be able to estimate the mean longevity of motors received from supplier I with a 95% probability of an error no more than 20 hours. If he knows that the standard deviation of the lengths of life of motors received from supplier I is 400 hours, how large a sample must the firm take of the motors received from supplier I to be certain that this is true?

The BFWMC statistician says that the 90% confidence interval for the mean length of life of motors received from supplier II is 4,500 to 4,800 hours, based on a sample of 36 motors. The statistician also says that the standard deviation of the lengths of life of motors received from supplier II is 500 hours. Is there any contradiction between these statements? If so, what is the contradiction?