**Q.** Two independent samples of observations were collected. For the first sample of 60 elements, the mean was 86 and the standard deviation 6. The second sample of 75 elements had a mean of 82 and a standard deviation of 9.

(a) Compute the estimated standard error of the difference between the two means.

(b) Using *α* 0.01, test whether the two samples can reasonably be considered to have come from populations with the same mean.

**Q.** Two independent samples were collected. For the first sample of 42 items, the mean was 32.3 and the variance 9. The second sample of 57 items had a mean of 34 and a variance of 16.

(a) Compute the estimated standard error of the difference between the two means.

(b) Using *α* 0.05, test whether there is sufficient evidence to show the second population has a larger mean.

**Q.** Two research laboratories have independently produced drugs that provide relief to arthritis sufferers. The first drug was tested on a group of 90 arthritis sufferers and produced an average of 8.5 hours of relief, and a sample standard deviation of 1.8 hours. The second drug was tested on 80 arthritis sufferers, producing an average of 7.9 hours of relief, and a sample standard deviation of 2.1 hours. At the 0.05 level of significance, does the second drug provide a significantly shorter period of relief?

**Q.** Bulls Eye Discount store has always prided itself on customer service. The store hopes that all Bulls Eye stores are providing the same level of service from coast to coast, so they have surveyed some customers. In the Southeast region, a random sample of 97 customers yielded an average overall satisfaction rating of 8.8 out of 10 and the sample standard deviation was 0.7. In the Northeast region, a random sample of 84 customers resulted in an average rating of 9.0 and the sample standard deviation was 0.6. Can Bulls Eye conclude, at *α* 0.05, that the levels of customer satisfaction in the two markets are significantly different?