Example: Random Generation of Data (Prob. 8, page 447)

The TI-83/84 Plus calculator can be used to generate random data from a normally distributed population. The command **randNorm(100,15,50)** generates 50 values from a normally distributed population with $\mu = 100$ and $\sigma = 15$. One such generated sample of 50 values has a mean of 98.4 and a SD of 16.3. Use a 0.10 significance level to test the claim that the sample actually does come from a population with a mean equal to 100. Assume that σ is known to be 15. Based on the results, does it appear that the calculator's random number generator is working correctly?

Example: Umpire Strike Rate (Prob. 11, page 447)

In a recent year, some professional baseball players complained that umpires were calling more strikes than the average rate of 61.0% called the previous year. At one point in the season, umpire Dan Morrison called strikes in 2231 of 3581 pitches (based on data from *USA Today*).

a) Using $\alpha = 0.05$, test the claim that his strike rate is greater than 61.0%.

b) Construct a 95% CI for the proportion of strikes called by umpire Dan Morrison. Interpret the interval. How do the results compare with the test in part (a)?

Example: Nicotine in Cigarettes (Prob. 12, page 447)

The Carolina Tobacco Company advertised that its best-selling nonfiltered cigarettes contain at most 40 mg of nicotine, but Consumer Advocate magazine ran tests of 10 randomly selected cigarettes and found the amounts (in mg) shown in the accompanying list. It's a serious matter to charge that the company advertising is wrong, so the magazine editor chooses a significance level of $\alpha = 0.01$ in testing her belief that the mean nicotine content is greater than 40 mg. Using a 0.01 significance level, test the editor's belief that the mean is greater than 40 mg.

47.3	39.3	40.3	38.3	46.3
43.3	42.3	49.3	40.3	46.3