2. Degrees of Freedom For the accompanying screen display, a simple random sample of size $n = 40$ was obtained from the population of duration times (seconds) of eruptions of the Old Faithful geyser.

a. What is the number of degrees of freedom that should be used for finding the critical value $t_{\alpha/2}$?

b. Find the critical value $t_{\alpha/2}$ corresponding to $n = 40$ and a 95% confidence level.

**c.** Give a brief general description of the number of degrees of freedom.

3. Interpreting a Confidence Interval The results in the screen display are based on a 95% confidence level. Write a statement that correctly interprets the confidence interval.

4. Normality Requirement What does it mean when we say that the confidence interval methods of this section are *robust* against departures from normality? Does the dotplot below appear to satisfy the requirement of this section? Why or why not?

Chocolate Chips in Chips Ahoy Reduced Fat Cookies
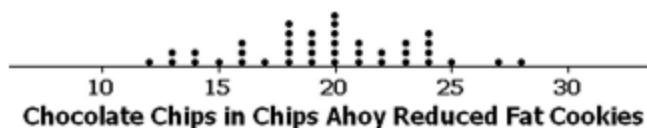
Using Correct Distribution.   *In Exercises 5–8, assume that we want to construct a confidence interval. Do one of the following, as appropriate: (a) Find the critical value $t_{\alpha/2}$, (b) find the critical value $z_{\alpha/2}$, (c) state that neither the normal distribution nor the t distribution applies.*
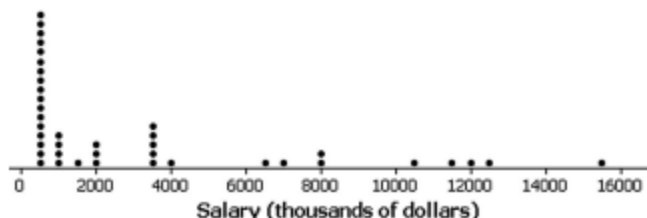
5. Confidence level is 95%, σ is known to be $4,385,000, and the dotplot of a sample of Red Sox baseball player salaries is as shown below.

Salary (thousands of dollars)
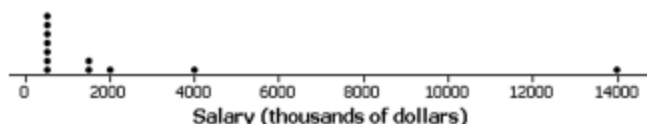
6. Confidence level is 90%, σ is not known, and the dotplot of IQ scores of 20 randomly selected statistics instructors is as shown below.

IQ

7. Confidence level is 99%, σ is not known, and the dotplot of a sample of 40 values of professional baseball player salaries is as shown below.

Salary (thousands of dollars)

8. Confidence level is 99%, σ is known to be $4,385,000, and the dotplot of 40 sample values of professional baseball players is as shown in Exercise 7.