There should be a 1 after Freq.
Arrow down to C-level and enter 0.95
Arrow down to Calculate and press ENTER.
The 95% confidence interval is (7.3006, 9.1527)

NOTE

When calculating the error bound, a probability table for the Student's t-distribution can also be used to find the value of *t*. The table gives *t*-scores that correspond to the confidence level (column) and degrees of freedom (row); the *t*-score is found where the row and column intersect in the table.

TRY IT 8.8

You do a study of hypnotherapy to determine how effective it is in increasing the number of hours of sleep subjects get each night. You measure hours of sleep for 12 subjects with the following results. Construct a 95% confidence interval for the mean number of hours slept for the population (assumed normal) from which you took the data.

8.2; 9.1; 7.7; 8.6; 6.9; 11.2; 10.1; 9.9; 8.9; 9.2; 7.5; 10.5

EXAMPLE 8.9

Problem

The Human Toxome Project (HTP) is working to understand the scope of industrial pollution in the human body. Industrial chemicals may enter the body through pollution or as ingredients in consumer products. The scientists at HTP tested cord blood samples for 20 newborn infants in the United States. The cord blood of the "In utero/newborn" group was tested for 430 industrial compounds, pollutants, and other chemicals, including chemicals linked to brain and nervous system toxicity, immune system toxicity, and reproductive toxicity, and fertility problems. There are health concerns about the effects of some chemicals on the brain and nervous system. Table 8.3 shows how many of the targeted chemicals were found in each infant's cord blood.

79	145	147	160	116	100	159	151	156	126
137	83	156	94	121	144	123	114	139	99

Table 8.3

Use this sample data to construct a 90% confidence interval for the mean number of targeted industrial chemicals to be found in an in infant's blood.

Solution

From the sample, you can calculate $\overline{x}$ = 127.45 and s = 25.965. There are 20 infants in the sample, so n = 20, and df = 20 – 1 = 19.

You are asked to calculate a 90% confidence interval: CL = 0.90, so α = 1 – CL = 1 – 0.90 = 0.10 $\frac{\alpha}{2} = 0.05, t_{\frac{\alpha}{2}} = t_{0.05}$

By definition, the area to the right of $t_{0.05}$ is 0.05 and so the area to the left of $t_{0.05}$ is 1 – 0.05 = 0.95.

Use a table, calculator, or computer to find that $t_{0.05}$ = 1.729.

$$EBM = t_{\frac{\alpha}{2}}\left(\frac{s}{\sqrt{n}}\right) = 1.729\left(\frac{25.965}{\sqrt{20}}\right) \approx 10.038$$