Explanation of 90% Confidence Level: Ninety percent of all confidence intervals constructed in this way contain the true mean statistics exam score. For example, if we constructed 100 of these confidence intervals, we would expect 90 of them to contain the true population mean exam score.

> ### ⟩ TRY IT 8.2

Suppose average pizza delivery times are normally distributed with an unknown population mean and a population standard deviation of six minutes. A random sample of 28 pizza delivery restaurants is taken and has a sample mean delivery time of 36 minutes.

Find a 90% confidence interval estimate for the population mean delivery time.

EXAMPLE 8.3

The Specific Absorption Rate (SAR) for a cell phone measures the amount of radio frequency (RF) energy absorbed by the user's body when using the handset. Every cell phone emits RF energy. Different phone models have different SAR measures. To receive certification from the Federal Communications Commission (FCC) for sale in the United States, the SAR level for a cell phone must be no more than 1.6 watts per kilogram. Table 8.1 shows the highest SAR level for a random selection of cell phone models as measured by the FCC.

SAR Data for a sample of 30 cell phones		
1.11	1.36	0.74
1.48	1.34	0.5
1.43	1.18	0.4
1.3	1.3	0.867
1.09	1.26	0.68
0.455	1.29	0.51
1.41	0.36	1.13
0.82	0.52	0.3
0.78	1.6	1.48
1.25	1.39	1.38

Table 8.1

ⓘ Problem

Find a 98% confidence interval for the true (population) mean of the Specific Absorption Rates (SARs) for cell phones. Assume that the population standard deviation is $\sigma = 0.337$.

⊘ Solution

To find the confidence interval, start by finding the point estimate: the sample mean.

$\bar{x} = 1.024$