Recall the context of the dates of pennies in circulation in 2008. For our sampling frame in that study (all pennies in the purple box), we now tell you the mean is 1994.57 and standard deviation is 10.64.

We used sampling distributions to help us think through how different samples from the sampling frame can have different means and differently shaped distributions. When we look an multiple samples' means, we find that this sampling distribution has its own shape, center, and spread. One possible sampling distribution of 100 samples (with n = 30) in this problem is displayed on page 1.2.

1. What does one dot represent in this distribution? What do you notice about this distribution?

Consider a situation where you do not have access to the whole population, but you would like to make a good solid guess for the value of the population mean. You will use ONLY ONE random sample to make this guess.

1. As a group agree on a strategy for how you would use the sample data to guess the value of the unknown population mean. How might you defend your strategy mathematically?

The Central Limit Theorem (CLT) provides important information about sampling distributions of the mean. Find and read a description of the CLT for sample means in a textbook or on a website.

1. Revise your strategy in light of the CLT. Describe your revised strategy in the space below.

Page 1.6 contains two random samples (examp.samp1 and examp.samp2) of size 30 from our population of interest.

1. Use your strategy to determine a guess at the population mean for each of these samples. In each case, did your guess come close the true value of the population mean? Describe your work below.

Page 1.8 The next page contains a program for taking 100 samples of size *n* from our population of interest and displaying the means for all 100 samples (type sampdistmeandate(*n*)). Explore with this program using different sample sizes.

1. Below, make a conjecture as to how the sample size affects your strategy for guessing the value of the population mean.
2. What other parts of your strategy may affect your guess besides sample size?
3. On the flipchart paper provided, use words, pictures, and symbols to communicate what your group believes to be the best way to use a sample to make a good, solid guess at the value of an unknown population mean.