

1.
  - a. 87.5 and 6.7 are parameters.  $\mu = 87.5, \sigma = 6.7$
  - b. Keya should list all possible samples of size 2 and calculate the mean for each sample, then make a dotplot of the sample means.
  - c. Mean = 87.5, standard deviation = 4.738
  - d. 10% condition.  $2 \leq 10\%(25)$ .
2.
  - a. The distribution of number of social media accounts for all AP Statistics students is approximately normal with mean 3.23 accounts and standard deviation 1.35 accounts.
  - b. The distribution of the number of social media accounts for this sample of 15 AP Statistics students is slightly skewed to the right with a mean of 2.53 accounts and a standard deviation of 1.3 accounts.
  - c. This is the sampling distribution of the sample mean.
  - d. The shape of the sampling distribution of the sample mean number of social media accounts is similar to the population distribution (approximately normal), with a mean of 3.23 accounts and a standard deviation of  $\frac{1.35}{\sqrt{15}} = 0.349$  accounts.
3.
  - a. 0.1379 (using Table A) or 0.1385 (using technology).
  - b. Girl Scout Troop A would be less likely to receive the bonus under the new plan. The sampling distribution of the sample mean for  $n = 3$  Girl Scouts would have the same mean ( $\mu = 25$ ), but less variability than the distribution of individual values ( $\sigma_{\bar{x}} = \frac{4.6}{\sqrt{3}} < 4.6$ ), so it would be less likely to be 5 or more boxes above the mean of 25 boxes.
4.
  - a. 10 students. When sampling without replacement, the sample size must be less than or equal to 10% of the population size in order to use the standard deviation formula for the sampling distribution. With a population size of 100 students, the largest sample size possible is 10 (10% of 100).
  - b. Mean = 3.2. Standard deviation = 0.177.
  - c. The shape and mean will stay the same, and the standard deviation will increase.
5.
  - a. 0.5251 (Table A) or 0.5246 (using technology).
  - b. The sampling distribution of the sample mean temperature for samples of size 5 is approximately normally distributed with a mean of 52.1°F and a standard deviation of 4.696°F.
  - c. 0.0049 (Table A) or 0.0050 (using technology).
6. A
7. D