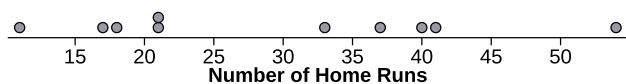


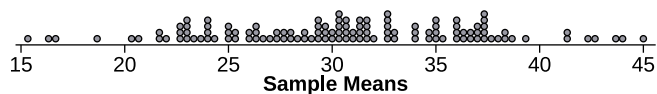
1. Investment firms pay close attention to the unemployment rate, as it can help them to make predictions about the success of certain stocks. One of these firms selected a random sample of 1,200 U.S. adults and found that 5.4% of them are unemployed. Later that week, the Bureau of Labor Statistics revealed that the true unemployment rate for all U.S. adults was 3.9%.
 - a. Identify the population and the sample.
 - b. Is 0.054 a statistic or parameter? What symbol should be used for 0.054?
 - c. Is 0.039 a statistic or parameter? What symbol should be used for 0.039?

2. The manager of the ticketing box office for the Los Angeles Lakers is interested in knowing the percent of fans that buy food while attending a game. She samples 50 fans that are easy to access in the expensive suites and finds that 88% of them buy food while at the game.
 - a. Identify the population and the sample.
 - b. What type of sampling method was used? Explain.
 - c. Do you think the statistic will be a good estimator of the parameter? Explain.

3. In a recent season, the Atlanta Braves had 10 players who hit more than 10 home runs, led by Matt Olson who hit 54 home runs. Here is a dotplot of the number of home runs for these 10 players.



- a. What does the dot at 33 represent?
- b. A hitting coach took a random sample of 3 different players and calculated the mean of the sample as 31.7 home runs. Is this a statistic or parameter? What symbol should be used for this value?
- c. From this list of 10 players, there are 120 different samples of size 3 that can be selected. Here is a dotplot which shows the means for all 120 of these samples. Name this type of distribution.



- d. What does the dot at 32 represent?

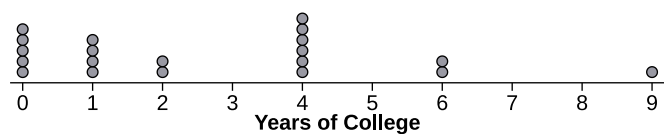
4. There are four teachers in a math department at a small high school. Here are the number of years teaching for these teachers: 2, 7, 12, 25 years.
- a. List out all possible samples, without replacement, of size 2 and then calculate the average number of years teaching for each sample. The first sample is done for you.

Sample	Average Number of Years
(2, 7)	4.5

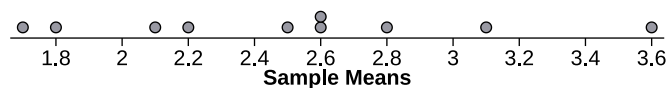
- b. Make a dotplot of the average numbers of years.

- c. Name this type of distribution.

5. A random sample of 20 U.S. adults are asked how many years of college they completed. Here are the results:



- a. Is this a sampling distribution of $\bar{x}$? Explain.
- b. We repeated this process 10 times (each time selecting a sample of 20 U.S. adults) and calculated the mean number of years of college for each of the samples, which is shown in the dotplot below. Is this a sampling distribution of $\bar{x}$? Explain



6. A teacher grades homework in an unusual way. There are four homework assignments per week, each graded out of 10 points. The teacher collects and grades the four assignments for each student, randomly selects two of the student's assignments without replacement, then finds the maximum of those two. One student in the class has homework scores of 0, 6, 8, and 10 during a week. Which of the following describes the sampling distribution of the sample maximum?

A)

Maximum	0	6	8	10
Probability	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{6}$

B)

Maximum	0	6	8	10
Probability	$\frac{0}{6}$	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{2}$

C)

Maximum	0	6	8	10
Probability	0	0	0	1

D)

Maximum	0	6	8	10
Probability	0	0	$\frac{1}{2}$	$\frac{1}{2}$

7. Which of the following shows the correct steps to generate the exact sampling distribution of the sample mean?

- A) Select a random sample from the population. Calculate the sample mean. Repeat for all possible samples of the same size from the same population.
- B) Select a random sample from the population. Calculate the sample mean. Repeat until 30 samples are selected of the same size from the same population.
- C) Select a random sample from the population. Calculate the sample mean. Repeat for all possible samples of different sizes from the same population.
- D) Select a random sample from the population. Calculate the population mean. Repeat until 30 samples are selected of the same size from the same population.