

Lesson 6-2: Draw Inferences from Data

1. Sample answer: You can display data from random samples in a dot plot or box plot. Then you can look for patterns and trends or use measures of center or variability to make inferences.
2. Sample answer: If you use a random sample, the data is likely to be representative of the entire population. An inference based on data from a random sample is very likely to be true, or valid.
3. Sample answer: Though the sample is random, it only is based on students in his science class and may not reflect the opinions of the entire population, or students in his school. So it is not valid to conclude detective shows are the most popular among students in his school.
4. Sample answer: You can write a ratio or percent that relates the number of people in the sample with a certain characteristic to the total number in the sample. Then you can write and solve a proportion with that ratio to estimate a value for the population.
5.
 - a. Sample answer: The data are clustered around 2 and 4, so more than half of the people who play the game will make between 2 and 4 baskets.
 - b. The median is 3. The mean is 2.7. They support the inference made in part (a) because these measures indicate, on average, that players make about 3 baskets.
6. 45 players
7. No; Sample answer: Half the tickets sold from Window 1 were between \$30 and \$73. Half the tickets sold from Window 2 were between \$38 and \$73. Both Windows 1 and 2 show median ticket prices that are higher than \$40.
8. $\frac{30}{50} = \frac{x}{300}$
180
180
9. $\frac{51}{60} = \frac{x}{300}$
255
255
10. No; Sample answer: There is a big difference in the results of the surveys, so the data do not support the same inference. While both sample sizes are large, the data were not collected randomly so the samples are likely not representative. They cannot make a valid inference.
11. No; Sample answer: A sample of five is not large enough to represent the entire population of doctors. There is not enough data to support the biochemist's inference.
12.
 - a. Sample answer: About three times as many students are likely to be wearing gym shoes as boots.
 - b. Sample answer: About half as many students are likely to be wearing boots as sandals.

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13. a. Shantel; Sample answer: Shantel used a sampling method that is more likely to result in a representative sample of the entire population.
- b. Sample answer: Syrus might have chosen a store in which the majority of customers enjoy reading fantasy novels.
14. a. Sample answer: The inference is not valid because not everyone has access to the internet and there were only 5 comedians to choose from.
- b. Expand the poll to stores and other locations.
15. No; Sample answer: In the sample, 30 of 100 prefer to watch movies in a theater, so about 120 of 400 would be expected to prefer to watch movies in a theater.
16. B, E
17. $\frac{10}{25} = \frac{n}{190}$
 $n = 76$
18. a. Sample answer: Based on Mitchell's data, the median number of free throws is 9.
- b. Sample answer: Based on Lydia's data, the median number of free throws is 12.
- c. Neither; Sample answer: Mitchell's sample included mostly new participants who may have been less skilled, while Lydia's sample included participants who had been at the camp longer and may have been more skilled at shooting free throws.
19. Yes; Sample answer: The medians of both survey results are almost the same. The means are close as well. So, 7 haircuts is a good inference that is supported by the results of both surveys.