AP Stat Ch 7 Practice Quiz _____ is Normal
Congress/Jamison Period:
Calculator and Green Packet OK

1. A statistic is said to be unbiased if _____

2. A survey conducted by Gallup asked whether Americans voted in the most recent election. Seventy-nine percent of the respondents said they voted. The number 79% is a(n)

   _____

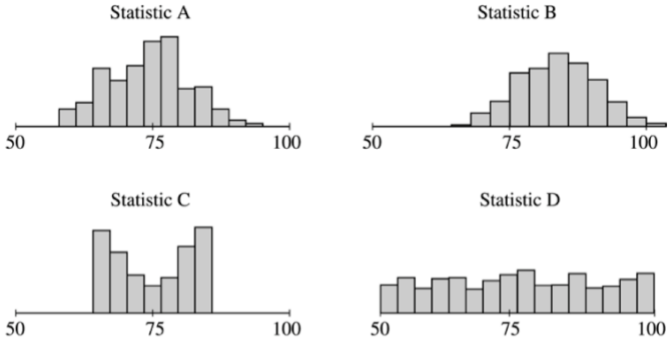
3. Suppose a study is looking at the weight of the eggs produced by a certain breed of hen.

a. Assume the egg weights are normally distributed with mean 65 grams and standard deviation 5 grams. Calculate the probability that a randomly selected egg weighs between 62.5 and 68.75 grams.

b. If cartons of such eggs can be considered to be an SRS of size 12 from the population of all eggs, what is the probability that the weight of a carton falls between 750 grams and 825 grams.

c. How do you know that that the sampling distribution of egg weights was Normal to complete part (b)?

4. Four different statistics have been proposed as estimators of a population parameter. To investigate the behavior of these estimators, 500 random samples are selected from a known population and each statistic is calculated for each sample. The true value of the population parameter is 75. The graphs below show the distribution of values for each statistic.



a. Which of the statistics appear to be unbiased estimators of the population parameter? How can you tell?

b. Which of statistics, A or B, would be a better estimator of the population parameter? Explain your choice.

c. Which of statistics, C or D, would be a better estimator of the population parameter? Explain your choice.

5. Trains carry bauxite ore from mine in Canada to an aluminum processing plant in northern New York State in hopper cars. Filling equipment is used to load ore into hopper cars. When functioning properly, the actual weights of ore loaded into each car by the filling equipment at the mine are approximately normally distributed with a mean of 70 tons and a standard deviation of 0.9 tons. If the mean is greater than 70 tons, the loading mechanism is overfilling.

a. If the filling equipment is functioning properly, what is the probability that the weight of the ore in a randomly selected car will be 70.7 tons or more? Show your work.

b. Suppose that the weight of ore in a randomly selected car is 70.7 tons. Would that fact make you suspect that the loading mechanism is overfilling the cars? Justify your answer.

c. If the filling equipment is functioning properly, what is the probability that a random sample of 10 cars have a mean ore weight of 70.7 tons or more? Show your work.

d. Based on your answer in part (c), if a random sample of 10 cars had a mean ore weight of 70.7 tons, would you suspect that the loading mechanism was overfilling the cars? Justify your answer.