Question ID c7a13932

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Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	Medium

ID: c7a13932

Based on a random sample from a population, a researcher estimated that the mean value of a certain variable for the population is 20.5, with an associated margin of error of 1. Which of the following is the most appropriate conclusion?

A. It is plausible that the actual mean value of the variable for the population is between 19.5 and 21.5.

B. It is not possible that the mean value of the variable for the population is less than 19.5 or greater than 21.5.

C. Every value of the variable in the population is between 19.5 and 21.5.

D. The mean value of the variable for the population is 20.5.

$$20.5 - 1 < x < 20.5 + 1$$
$$19.5 < x < 21.5$$

Question ID a22f737f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	Medium

ID: a22f737f

A company that produces socks wants to estimate the percent of the socks produced in a typical week that are defective. A random sample of 310 socks produced in a certain week were inspected. Based on the sample, it is estimated that 12% of all socks produced by the company in this week are defective, with an associated margin of error of 3.62%. Based on the estimate and associated margin of error, which of the following is the most appropriate conclusion about all socks produced by the company during this week?

A. 3.62% of the socks are defective.

B. It is plausible that between 8.38% and 15.62% of the socks are defective.

C. 12% of the socks are defective.

D. It is plausible that more than 15.62% of the socks are defective.

$$12 \overset{\%}{-} 3.62 < x < 12 \overset{\%}{+} 3.62$$

$$8.38 < x < 15.62$$

Question ID 1e7832f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	Medium

ID: 1e7832f1

A sample consisting of 720 adults who own televisions was selected at random for a study. Based on the sample, it is estimated that 32% of all adults who own televisions use their televisions to watch nature shows, with an associated margin of error of 3.41%. Which of the following is the most plausible conclusion about all adults who own televisions?

A. More than 35.41% of all adults who own televisions use their televisions to watch nature shows.

B. Between 28.59% and 35.41% of all adults who own televisions use their televisions to watch nature shows.

C. Since the sample included adults who own televisions and not just those who use their televisions to watch nature shows, no conclusion can be made.

D. Since the sample did not include all the people who watch nature shows, no conclusion can be made.

$$32\% - 3.41 < x < 32\% + 3.41$$

$$28.59 < x < 35.41$$

Question ID 2c3af914

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	Medium

ID: 2c3af914

From a population of $50{,}000$ people, $1{,}000$ were chosen at random and surveyed about a proposed piece of legislation. Based on the survey, it is estimated that 35% of people in the population support the legislation, with an associated margin of error of 3%. Based on these results, which of the following is a plausible value for the total number of people in the population who support the proposed legislation?

A. 350

B. 650

C. $16{,}750$

D. $31{,}750$

% %

$35 - 2 < x < 35 + 3$

$33 < x < 38$

$\times 50{,}000$

$16{,}500 < x < 19{,}000$

Question ID 7a234b15

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	Medium

ID: 7a234b15

A company fills boxes with approximately 23 pounds of oranges. To test the accuracy of the filling process, 344 boxes of oranges were selected at random and weighed. Based on the sample, it is estimated that the average weight of all boxes of oranges filled by the company in an 8-hour period is 23.1 pounds, with an associated margin of error of 0.19 pounds. Which of the following is the best interpretation of this estimate?

A. Plausible values for the average weight of all boxes of oranges filled by the company are between 22.91 pounds and 23.29 pounds.

B. Plausible values for the average weight of all boxes of oranges filled by the company are less than 22.91 pounds or greater than 23.29 pounds.

C. The average weight of all boxes of oranges filled by the company is less than 23.01 pounds.

D. The average weight of all boxes of oranges filled by the company is greater than 23.01 pounds.

$$23.1 - 0.19 < x < 23.1 + 0.19$$

$$22.91 < x < 23.29$$

Question ID 591db6cf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	Medium

ID: 591db6cf

To estimate the proportion of a population that has a certain characteristic, a random sample was selected from the population. Based on the sample, it is estimated that the proportion of the population that has the characteristic is 0.49, with an associated margin of error of 0.04. Based on this estimate and margin of error, which of the following is the most appropriate conclusion about the proportion of the population that has the characteristic?

A. It is plausible that the proportion is between 0.45 and 0.53.

$0.49 - 0.04 < X < 0.49 + 0.04$

$0.45 < X < 0.53$

B. It is plausible that the proportion is less than 0.45.

C. The proportion is exactly 0.49.

D. It is plausible that the proportion is greater than 0.53.