

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

ID: 85939da5

3.1

Texting behavior	Talks on cell phone daily	Does not talk on cell phone daily	Total
Light	110	146	256
Medium	139	164	303
Heavy	166	74	240
Total	415	384	799

In a study of cell phone use, 799 randomly selected US teens were asked how often they talked on a cell phone and about their texting behavior. The data are summarized in the table above. Based on the data from the study, an estimate of the percent of US teens who are heavy texters is 30% and the associated margin of error is 3%. Which of the following is a correct statement based on the given margin of error?

$$\frac{240}{799} \approx 30.01\%$$

with in 3% of the estimation of 30%.

- A. Approximately 3% of the teens in the study who are classified as heavy texters are not really heavy texters.
- B. It is not possible that the percent of all US teens who are heavy texters is less than 27%.
- C. The percent of all US teens who are heavy texters is 33%.
- D. It is doubtful that the percent of all US teens who are heavy texters is 35%.

unlikely

Question ID c7e73ece

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ID: c7e73ece

3.2

Views on Nuclear
Energy Use

	Response	Frequency	
→	Strongly favor	56	} 270
→	Somewhat favor	214	
→	Somewhat oppose	104	} 141
→	Strongly oppose	37	

Handwritten red annotations: A horizontal line is drawn between the 'Somewhat favor' and 'Somewhat oppose' rows. A large red bracket on the right groups the 'Strongly favor' and 'Somewhat favor' rows with the value 270. Another large red bracket on the right groups the 'Somewhat oppose' and 'Strongly oppose' rows with the value 141. The total value 411 is written in the center between the two brackets.

A researcher interviewed 411 randomly selected US residents and asked about their views on the use of nuclear energy. The table above summarizes the responses of the interviewees. If the population of the United States was 300 million when the survey was given, based on the sample data for the 411 US residents, what is the best estimate, in millions, of the difference between the number of US residents who somewhat favor or strongly favor the use of nuclear energy and the number of those who somewhat oppose or strongly oppose it? (Round your answer to the nearest whole number.)

$$\left| \frac{270}{411} - \frac{141}{411} \right| = 31.3869\%$$

$$31.3869\% (300 \text{ M}) = 94.1607 \text{ M} \\ \approx 94 \text{ M} \\ //$$

Question ID 308084c5

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ID: 308084c5

3.3

Sample	Percent in favor	Margin of error
A	52%	4.2%
B	48%	1.6%

The results of two random samples of votes for a proposition are shown above. The samples were selected from the same population, and the margins of error were calculated using the same method. Which of the following is the most appropriate reason that the margin of error for sample A is greater than the margin of error for sample B?

- A. Sample A had a smaller number of votes that could not be recorded.
- B. Sample A had a higher percent of favorable responses.
- C. Sample A had a ~~larger~~ sample size.
- ~~D.~~ Sample A had a smaller sample size.

$$n \propto \frac{1}{\text{Error}}$$
 4.2% > 1.6%

Question ID 9ba3e283

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ID: 9ba3e283

3.4

sample

In State X, Mr. Camp's eighth-grade class consisting of 26 students was surveyed and 34.6 percent of the students reported that they had at least two siblings. The average eighth-grade class size in the state is 26. If the students in Mr. Camp's class are representative of students in the state's eighth-grade classes and there are 1,800 eighth-grade classes in the state, which of the following best estimates the number of eighth-grade students in the state who have fewer than two siblings?

- A. 16,200
- B. 23,400
- ~~C. 30,600~~
- D. 46,800

$$< 2 \rightarrow 100 - 34.6 = 65.4\%$$

Class ละ 26 คน

มี 1,800 Classes

$$\text{ทั้งหมด } 26(1,800) = 46,800$$

$$< 2 \rightarrow 65.4\% (46,800) = 30,607.2 \approx 30,600$$