## © CollegeBoard Question ID 18867

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in History/ Social Studies, Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 1. Choose an appropriate graphical representation for a given data set. | Calculator |
|  |  |  |  |  |  | 2. Interpret information from a given representation of data in context. |  |
|  |  |  |  |  |  | 3. Analyze and interpret numerical data distributions represented with frequency tables, histograms, dot plots, and boxplots. |  |



The number of rooftops with solar panel installations in 5 cities is shown in the graph above. If the total number of installations is 27,500 , what is an appropriate label for the vertical axis of the graph?
A. Number of installations (in tens)
B. Number of installations (in hundreds)
C. Number of installations (in thousands)
D. Number of installations (in tens of thousands)

## Rationale

Choice $C$ is correct. Let $x$ represent the number of installations that each unit on the $y$-axis represents. Then $9 x, 5 x, 6 x, 4 x$, and $3.5 x$ are the number of rooftops with solar panel installations in cities $A, B, C, D$, and $E$, respectively. Since the total number of rooftops is 27,500 , it follows that $9 x+5 x+6 x+4 x+3.5 x=27,500$, which simplifies to $27.5 x=27,500$. Thus, $x=1,000$. Therefore, an appropriate label for the $y$-axis is "Number of installations (in thousands)."
Choices $A, B$, and $D$ are incorrect and may result from errors when setting up and calculating the units for the $y$-axis.
Question Difficulty: Medium

## © CollegeBoard Question ID 18868

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 4. For quantitative variables, calculate, compare, and interpret mean, median, and range. Interpret (but don't calculate) standard deviation. <br> 7. Given an appropriate data set, calculate the mean. | Calculator |



Based on the histogram above, of the following, which is closest to the average (arithmetic mean) number of seeds per apple?
A. 4
B. 5
C. 6
D. 7

Rationale
Choice C is correct. The average number of seeds per apple is the total number of seeds in the 12 apples divided by the number of apples, which is 12 . On the graph, the horizontal axis is the number of seeds per apple and the height of each bar is the number of apples with the corresponding number of seeds. The first bar on the left indicates that 2 apples have 3 seeds each, the second bar indicates that 4 apples have 5 seeds each, the third bar indicates that 1 apple has 6 seeds, the fourth bar indicates that 2 apples have 7 seeds each, and the fifth bar indicates that 3 apples have 9 seeds each. Thus, the total number of seeds for the 12 apples is $(2 \times 3)+(4 \times 5)+(1 \times 6)+(2 \times 7)+(3 \times 9)=73$, and the average number of seeds per apple is $\frac{73}{12}=6.08$. Of the choices given, 6 is closest to 6.08 .

Choice A is incorrect; it is the number of apples represented by the tallest bar but is not the average number of seeds for the 12 apples. Choice $B$ is incorrect; it is the number of seeds per apple corresponding to the tallest bar, but is not the average number of seeds for the 12 apples. Choice $D$ is incorrect; a student might choose this value by correctly calculating the average number of seeds, 6.08 , but incorrectly rounding up to 7 .

Question Difficulty: Medium

## $\theta$ CollegeBoard

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in Science, Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 6. Understand and describe the effect of outliers on mean and median. | Calculator |

Lengths of Fish (in inches)
$\begin{array}{lllllll}8 & 9 & 9 & 9 & 10 & 10 & 11\end{array}$
11121212121313
13141415151624

The table above lists the lengths, to the nearest inch, of a random sample of 21 brown bullhead fish. The outlier measurement of 24 inches is an err range of the values listed, which will change the most if the 24 -inch measurement is removed from the data?
A. Mean
B. Median
C. Range
D. They will all change by the same amount.

## Rationale

Choice C is correct. The range of the lengths of the 21 fish represented in the table is $24-8=16$ inches, and the range of the remaining 20 lengths after the 24 -inch measurement is removed is $16-8=8$ inches. Therefore, after the 24 -inch measurement is removed, the change in range, 8 inches, is much greater than the change in the mean or median.
Choice $A$ is incorrect. Let $m$ be the mean of the lengths, in inches, of the 21 fish. Then the sum of the lengths, in inches, of the 21 fish is 21 m . After the 24 -inch measurement is removed, the sum of the lengths, in inches, of the remaining 20 fish is $21 \mathrm{~m}-24$, and the mean length, in inches, of these 20 fish is $\frac{21 m-24}{20}$, which is a change of $\frac{24-m}{20}$ inches. Since m must be between the smallest and largest measurements of the 21 fish, it follows that $8<m<24$, from which it can be seen that the change in the mean, in inches, is between $\frac{24-24}{20}=0$ and $\frac{24-8}{20}=\frac{4}{5}$, and so must be less than the change in the range, 8 inches. Choice $B$ is incorrect because the median length of the 21 fish represented in the table is 12 , and after the 24 -inch measurement is removed, the median of the remaining 20 lengths is also 12 . Therefore, the change in the median ( 0 ) is less than the change in the range ( 8 ). Choice $D$ is incorrect because the changes in the mean, median, and range of the measurements are different.

Question Difficulty: Medium

## © CollegeBoard Question ID 19651

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in History/ Social Studies, Problem Solving and Data Analysis | $\square \square \square$ | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 4. For quantitative variables, calculate, compare, and interpret mean, median, and range. Interpret (but don't calculate) standard deviation. <br> 7. Given an appropriate data set, calculate the mean. | Calculator |

Ages of the First 12 United States Presidents at the Beginning of Their Terms in Office

| President | Age <br> (years) | President | Age <br> (years) |
| :--- | :---: | :--- | :---: |
| Washington | 57 | Jackson | 62 |
| Adams | 62 | Van Buren | 55 |
| Jefferson | 58 | Harrison | 68 |
| Madison | 58 | Tyler | 51 |
| Monroe | 59 | Polk | 50 |
| Adams | 58 | Taylor | 65 |

## © CollegeBoard Question ID 20160

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 4. For quantitative variables, calculate, compare, and interpret mean, median, and range. Interpret (but don't calculate) standard deviation. <br> 7. Given an appropriate data set, calculate the mean. | Calculator |

An online store receives customer satisfaction ratings between 0 and 100, inclusive. In the first 10 ratings the store received, the average (arithmetic mean) of the ratings was 75 . What is the least value the store can receive for the 11th rating and still be able to have an average of at least 85 for the first 20 ratings?

## Rationale

The correct answer is 50 . The mean of a data set is the sum of the values in the data set divided by the number of values in the data set. The mean of 75 is obtained by finding the sum of the first 10 ratings and dividing by 10 . Thus, the sum of the first 10 ratings was 750 . In order for the mean of the first 20 ratings to be at least 85 , the sum of the first 20 ratings must be at least

## $\theta$ CollegeBoard Question ID 421898

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in History/ Social Studies, Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 4. For quantitative variables, calculate, compare, and interpret mean, median, and range. Interpret (but don't calculate) standard deviation. <br> 7. Given an appropriate data set, calculate the mean. | Calculator |

Percent of Residents Who Earned
a Bachelor's Degree or Higher

| State | Percent of residents |
| :---: | :---: |
| State A | $21.9 \%$ |
| State B | $27.9 \%$ |
| State C | $25.9 \%$ |
| State D | $19.5 \%$ |
| State E | $30.1 \%$ |
| State F | $36.4 \%$ |
| State G | $35.5 \%$ |

A survey was given to residents of all 50 states asking if they had earned a bachelor's degree or higher. The results from 7 of the states are given in the table above. The median percent of residents who earned a bachelor's degree or higher for all 50 states was $26.95 \%$. What is the difference between the median percent of residents who earned a bachelor's degree or higher for these 7 states and the median for all 50 states?
A. $0.05 \%$
B. $0.95 \%$
C. $1.22 \%$
D. $7.45 \%$

## Rationale

Choice $B$ is correct. The median of a set of numbers is the middle value of the set values when ordered from least to greatest. If the percents in the table are ordered from least to greatest, the middle value is $27.9 \%$. The difference between $27.9 \%$ and $26.95 \%$ is 0.95\%.

Choice A is incorrect and may be the result of calculation errors or not finding the median of the data in the table correctly. Choice C is incorrect and may be the result of finding the mean instead of the median. Choice D is incorrect and may be the result of using the middle value of the unordered list.

Question Difficulty: Hard

## CollegeBoard Question ID 422245

| Assessment | Test | Cross-Test and | Difficulty | Primary | Secondary | Tertiary | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Subscore |  | Dimension | Dimension | Dimension |  |
| SAT | Math | Analysis in Science, Problem |  | Problem Solving and Data Analysis | Inference from sample statistics | 1. Use sample mean and sample | Calculator |
|  |  | Solving and Data Analysis |  |  | and margin of error | proportion to estimate |  |
|  |  |  |  |  |  | population mean and population proportion. Utilize, |  |
|  |  |  |  |  |  | but do not calculate, margin of error. |  |

A study was done on the weights of different types of fish in a pond. A random sample of fish were caught and marked in order to ensure that none were weighed more than once. The sample contained 150 largemouth bass, of which $30 \%$ weighed more than 2 pounds. Which of the following conclusions is best supported by the sample data?
A. The majority of all fish in the pond weigh less than 2 pounds
B. The average weight of all fish in the pond is approximately 2 pounds
C. Approximately $30 \%$ of all fish in the pond weigh more than 2 pounds
D. Approximately $30 \%$ of all largemouth bass in the pond weigh more than 2 pounds.

## Rationale

Choice D is correct. The sample of 150 largemouth bass was selected at random from all the largemouth bass in the pond, and since $30 \%$ of the fish in the sample weighed more than 2 pounds, it can be concluded that approximately $30 \%$ of all largemouth bass in the pond weigh more than 2 pounds.
Choices A, B, and C are incorrect. Since the sample contained 150 largemouth bass, of which $30 \%$ weighed more than 2 pounds, this result can be generalized only to largemouth bass in the pond, not to all fish in the pond.

Question Difficulty: Hard

## © CollegeBoard Question ID 422297

| Assessment | Test | Cross-Test and | Difficulty | Primary | Secondary | Tertiary | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Subscore <br> Problem Solving |  | Dimension <br> Problem Solving | Dimension One variable data: | Dimension <br> 4. For quantitative | Calculator |
|  |  | and Data Analysis |  | and Data Analysis | Distributions and | variables, |  |
|  |  |  |  |  | center and spread | compare, and |  |
|  |  |  |  |  |  | interpret mean, median, and range. |  |
|  |  |  |  |  |  | Interpret (but don't calculate) standard deviation. |  |
|  |  |  |  |  |  | 7. Given an appropriate data set, calculate the mean. |  |

Questions 37 and 38 refer to the following information.
Number of Contestants by Score and Day
5 out of 54 out of 53 out of 52 out of 51 out of 50 out of 5 Total
Day 123462320
Day 223554120
Day 333453220
Total 7913169660

The same 20 contestants, on each of 3 days, answered 5 questions in order to win a prize. Each contestant received 1 point for each correct ansv contestants receiving a given score on each day is shown in the table above.

## CollegeBoard Question ID 422625

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in History/ Social Studies, Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 4. For quantitative variables, calculate, compare, and interpret mean, median, and range. Interpret (but don't calculate) standard deviation. <br> 7. Given an appropriate data set, calculate the mean. | Calculator |

Number of States with 10 or More
Electoral Votes in 2008

| Electoral votes | Frequency |
| :---: | :---: |
| 10 | 4 |
| 11 | 4 |
| 12 | 1 |
| 13 | 1 |
| 15 | 3 |
| 17 | 1 |
| 20 | 1 |
| 21 | 2 |
| 27 | 1 |
| 31 | 1 |
| 34 | 1 |
| 55 | 1 |

In 2008 , there were 21 states with 10 or more electoral votes, as shown in the table above. Based on the table, what was the median number of electoral votes for the 21 states?
A. 13
B. 15
C. 17
D. 20

## Rationale

Choice B is correct. The median of a list of numbers is the middle value when the numbers are listed in order from least to greatest. For the electoral votes shown in the table, their frequency should also be taken into account. Since there are 21 states represented in the table, the middle number will be the eleventh number in the ordered list. Counting the frequencies from the top of the table $(4+4+1+1+3=13)$ shows that the median number of electoral votes for the 21 states is 15 .

Choice A is incorrect. If the electoral votes are ordered from least to greatest taking into account the frequency, 13 will be in the tenth position, not the middle. Choice C is incorrect because 17 is in the fourteenth position, not in the middle, of the ordered list. Choice D is incorrect because 20 is in the fifteenth position, not in the middle, of the ordered list.

Question Difficulty: Hard
$\theta$ CollegeBoard $\quad$ Question ID 422834


Masses (kilograms)
Andrew 2.4 2.5 3.6 3.12.5 2.7
Maria x 3.12.72.93.32.8

| $\theta^{\prime}$ CollegeBoard | Question ID 422841 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Assessment <br> SAT | Test <br> Math | Cross-Test and Subscore <br> Analysis in History/ Social Studies, Problem Solving and Data Analysis | Difficulty | Primary Dimension Problem Solving and Data Analysis | Secondary <br> Dimension <br> Evaluating statistical claims: Observational studies and experiments | Tertiary <br> Dimension <br> 1. With random samples, describe which population the results can be extended to. <br> 2. Given a description of a study with or without random assignment, determine whether there is evidence for a causal relationship. | Calculator <br> Calculator |

A polling agency recently surveyed 1,000 adults who were selected at random from a large city and asked each of the adults, "Are you satisfied with the quality of air in the city?" Of those surveyed, 78 percent responded that they were satisfied with the quality of air in the city. Based on the results of the survey, which of the following statements must be true?

1. Of all adults in the city, 78 percent are satisfied with the quality of air in the city.
2. If another 1,000 adults selected at random from the city were surveyed, 78 percent of them would report they are satisfied with the quality of air in the $c$ 3. If 1,000 adults selected at random from a different city were surveyed, 78 percent of them would report they are satisfied with the quality of air in the cit
A. None
B. II only
C. I and II only
D. I and III only

## Rationale

Choice A is correct. Statement I need not be true. The fact that $78 \%$ of the 1,000 adults who were surveyed responded that they were satisfied with the air quality in the city does not mean that the exact same percentage of all adults in the city will be satisfied with the air quality in the city. Statement II need not be true because random samples, even when they are of the same size, are not necessarily identical with regard to percentages of people in them who have a certain opinion. Statement III need not be true for the same reason that statement II need not be true: results from different samples can vary. The variation may be even bigger for this sample since it would be selected from a different city. Therefore, none of the statements must be true.
Choices B, C, and D are incorrect because none of the statements must be true.
Question Difficulty: Medium

| Assessment | Test | Cross-Test and | Difficulty | Primary | Secondary | Tertiary | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in <br> History/ Social <br> Studies, Problem <br> Solving and Data <br> Analysis |  | Problem Solving and Data Analysis | Evaluating statistical claims: Observational studies and experiments | 4. Understand why a result can be extended only to the population from which the sample was selected. | Calculator |

To determine the mean number of children per household in a community, Tabitha surveyed 20 families at a playground. For the 20 families surveyed, the mean number of children per household was 2.4 . Which of the following statements must be true?
A. The mean number of children per household in the community is 2.4 .
B. A determination about the mean number of children per household in the community should not be made because the sample size is too small.
C. The sampling method is flawed and may produce a biased estimate of the mean number of children per household in the community
D. The sampling method is not flawed and is likely to produce an unbiased estimate of the mean number of children per household in the community.

## Rationale

Choice C is correct. In order to use a sample mean to estimate the mean for a population, the sample must be representative of the population (for example, a simple random sample). In this case, Tabitha surveyed 20 families in a playground. Families in the playground are more likely to have children than other households in the community. Therefore, the sample isn't representative of the population. Hence, the sampling method is flawed and may produce a biased estimate.
Choices A and D are incorrect because they incorrectly assume the sampling method is unbiased. Choice B is incorrect because a sample of size 20 could be large enough to make an estimate if the sample had been representative of all the families in the community.

Question Difficulty: Hard

## © CollegeBoard Question ID 1473712

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in History/ Social Studies, Problem Solving and Data Analysis | $\square \square \square$ | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 1. Choose an appropriate graphical representation for a given data set. <br> 2. Interpret information from a given representation of data in context. <br> 3. Analyze and interpret numerical data distributions represented with frequency tables, histograms, dot plots, and boxplots. | Calculator |

Ages of 20 Students Enrolled in a College Class
Age Frequency
186
195
204
212
221
231
301

The table above shows the distribution of ages of the 20 students enrolled in a college class. Which of the following gives the correct order of the mean, median, and mode of the ages?
A. mode < median < mean
B. mode < mean < median
C. median < mode < mean
D. mean < mode < median

## Rationale

Choice A is correct. The mode is the data value with the highest frequency. So for the data shown, the mode is 18 . The median is the middle data value when the data values are sorted from least to greatest. Since there are 20 ages ordered, the median is the average of the two middle values, the 10 th and 11 th, which for these data are both 19 . Therefore, the median is 19 . The mean is the sum of the data values divided by the number of the data values. So for these data, the mean is
$\frac{(18 \times 6)+(19 \times 5)+(20 \times 4)+(21 \times 2)+(22 \times 1)+(23 \times 1)+(30 \times 1)}{20}=20$
Since the mode is 18 , the median is 19 , and the mean is 20 , mode $<$ median $<$ mean.
Choices B and D are incorrect because the mean is greater than the median. Choice C is incorrect because the median is greater than the mode.
Alternate approach: After determining the mode, 18 , and the median, 19 , it remains to determine whether the mean is less than 19 or more than 19. Because the mean is a balancing point, there is as much deviation below the mean as above the mean. It is possible to compare the data to 19 to determine the balance of deviation above and below the mean. There is a total deviation of only 6 below 19 (the 6 values of 18); however, the data value 30 alone deviates by 11 above 19. Thus the mean must be greater than 19.

Question Difficulty: Medium

## © CollegeBoard Question ID 1474702

| Assessment | Test | Cross-Test and | Difficulty | Primary | Secondary | Tertiary | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT |  | Subscore <br> Analysis in |  | Dimension <br> Problem Solving | Dimension One variable data: | Dimension <br> 5. Compare | Calculator |
|  |  | Science, Problem |  | and Data Analysis | Distributions and | distributions using |  |
|  |  | Solving and Data Analysis |  |  | measures of center and spread | measures of center and spread, |  |
|  |  |  |  |  |  | including |  |
|  |  |  |  |  |  | distributions with different means |  |
|  |  |  |  |  |  | and the same standard |  |
|  |  |  |  |  |  | deviations and |  |
|  |  |  |  |  |  | ones with the same mean and |  |
|  |  |  |  |  |  | different standard |  |

The 22 students in a health class conducted an experiment in which they each recorded their pulse rates, in beats per minute, before and after comple The dot plots below display the results.


Let $\mathrm{s}_{1}$ and $\mathrm{r}_{1}$ be the standard deviation and range, respectively, of the data before exercise, and let $\mathrm{s}_{2}$ and $\mathrm{r}_{2}$ be the standard deviation and range, re exercise. Which of the following is true?
A. $s_{1}=s_{2 \text { and }} r_{1}=r_{2}$
B. $s_{1}<s_{2}$ and $r_{1}<r_{2}$
C. $s_{1}>s_{2}$ and $r_{1}>r_{2}$
D. $s_{1} \neq s_{2}$ and $r_{1}=r_{2}$

## Rationale

Choice D is correct. The two data sets have the same range. The first data set has a range of $88-56=32$, and the second data set has a range of $112-80=32$. Alternatively, it can be seen visually that the ranges are the same because the two dot plots are aligned, the scales of the graphs are the same, and the graphs have the same width. The two data sets have different standard deviations. Both dot plots show distributions that have a mean near the center value of the dot plot. The first dot plot shows most values clustered near the mean, while the second dot plot shows most values farther from the mean. Therefore, the standard deviations of the two data sets are not equal-the data represented by the second dot plot has a greater standard deviation. Choices A, B, and C are incorrect because they incorrectly assert either that the standard deviations are the same or that the ranges are different.

## GCollegeBoard Question ID 4168653

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in Science, Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 1. Choose an appropriate graphical representation for a given data set. <br> 2. Interpret information from a given representation of data in context. <br> 3. Analyze and interpret numerical data distributions represented with frequency tables, histograms, dot plots, and boxplots. | Calculator |

Questions 3-5 refer to the following information.

Head and Body Lengths of 14 Adult Crocodiles

$\qquad$
$\begin{array}{llllllll}150 & 200 & 250 & 300 & 350 & 400 & 450 & 500\end{array}$

The scatterplot above represents the head lengths, in centimeters ( cm ), and body lengths, in cm , of 14 adult crocodiles. The line of best fit for the d plot above summarizes the body lengths of the 14 crocodiles.

Based on the box plot, of the following, which is the best estimate of the median body length, in cm, of the 14 adult crocodiles?
A. 260
B. 300
C. 320
D. 370

## Rationale

Choice $C$ is correct. The median of a box plot is the value associated with the vertical line segment between the two ends of the box. For the given box plot, this line segment is approximately halfway between 300 cm and 350 cm . Only choice C gives a value between 300 cm and 350 cm ; therefore, the best estimate of the median body length, in cm, of the 14 adult crocodiles is 320 . Choices A, B, and D are incorrect. These values aren't between 300 cm and 350 cm .

## Question Difficulty: Easy

## © CollegeBoard Question ID 4168706

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in <br> History/ Social <br> Studies, Problem <br> Solving and Data <br> Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 1. Choose an appropriate graphical representation for a given data set. | Calculator |
|  |  |  |  |  |  | 2. Interpret information from a given representation of data in context. |  |
|  |  |  |  |  |  | 3. Analyze and interpret numerical data distributions represented with frequency tables, histograms, dot plots, and boxplots. |  |

$\vdash \quad \square \mid$
Acres of useful timberland

The number of acres of useful timberland in 13 counties in California is summarized in the box plot above. Which of the following is closest to the median number of acres?
A. 4,399
B. 7,067
C. 8,831
D. 10,595

## Rationale

Choice B is correct. The median of the data summarized by a box plot is the value associated with the vertical line segment within the box. According to the box plot shown, this value is slightly greater than 7,000 . Therefore, the closest value for the median number of acres is 7,067 .
Choice A is incorrect. This is the value associated with the vertical line segment forming the left-hand side of the box. Choice C is incorrect. This value is greater than the value associated with the vertical line segment within the box. Choice $D$ is incorrect. This is the value associated with the vertical line segment forming the right-hand side of the box.

Question Difficulty: Easy

## © CollegeBoard Question ID 4168737

| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary Dimension | Secondary Dimension | Tertiary Dimension |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Problem Solving and Data Analysis |  | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 1. Choose an appropriate graphical representation for a given data set. <br> 2. Interpret information from a given representation of data in context. <br> 3. Analyze and interpret numerical data distributions represented with frequency tables, histograms, dot plots, and boxplots. | Calculator |

Which of the following statements about the data represented in the box plot above must be true?
A. There are more data between 61 and 84 than between 51 and 61 .
B. There are no data between 37 and 51
C. The mean of the data is 61
D. The range of the data is 50

## Rationale

Choice D is correct. The range of the data is found by subtracting the minimum value from the maximum value. The minimum value is the value associated with the end of the left whisker of the box plot, and the maximum value is the value associated with the end of the right whisker of the box plot. For these data, the minimum value is 37 and the maximum value is 87 . Therefore, the range is $87-37=50$, which is a true statement.
Choices A and B are incorrect. The box plot shows the distribution of the data, not the number of data values. There isn't enough information to compare the numbers of data values in given intervals. Choice C is incorrect because 61 is the median of the data. There isn't enough information to determine the mean.

Question Difficulty: Hard

## - CollegeBoard Question ID 4169460



2,10,3,7,6

The mean of the list of numbers above is what fraction of the sum of the five numbers?

Rationale
The correct answer is $\frac{1}{5}$. The mean of the list of numbers is found by dividing the sum of the numbers by the number of values

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| Assessment | Test | Cross-Test and Subscore | Difficulty | Primary <br> Dimension | Secondary <br> Dimension | Tertiary <br> Dimension | Calculator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAT | Math | Analysis in Science, Problem Solving and Data Analysis | $\square \square \square$ | Problem Solving and Data Analysis | One variable data: Distributions and measures of center and spread | 1. Choose an appropriate graphical representation for a given data set. <br> 2. Interpret information from a given representation of data in context. <br> 3. Analyze and interpret numerical data distributions represented with frequency tables, histograms, dot plots, and boxplots. | Calculator |



