Question ID f890dc20

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: f890dc20

2, 2, 2, 3, 4, 4, 11

What is the median of the seven data values shown?

A. 2

B. 3

C. 4

D. 9

ID: f890dc20 Answer

Correct Answer: B

Rationale

Choice B is correct. When a data set has an odd number of values, the median can be found by ordering the values from least to greatest and determining the value in the middle. Since the values are already presented in order from least to greatest and there are 7 values, the median is the fourth value in the list. Therefore, the median is 3.

Choice A is incorrect. This is the mode. Choice C is incorrect. This is the mean. Choice D is incorrect. This is the range.

Question Difficulty: Easy

Question ID c88e0663

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: c88e0663

For a school fund-raiser, 10 students sold a total of 90 boxes of cookies. Which of the following can be calculated from this information?

A. The average number of boxes sold per student

B. The median number of boxes sold per student

C. The greatest number of boxes sold by one student

D. The least number of boxes sold by one student

ID: c88e0663 Answer

Correct Answer: A

Rationale

Choice A is correct. The average can be found by dividing the total number of boxes sold by the number of students, which is $\frac{90}{10} = 9$.

Choices B, C, and D are incorrect. Each results from choosing measures that require the results of individual students, which are not given.

Question Difficulty: Easy

Question ID 8736334b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 8736334b

Data set A: 72,73,73,76,76

Data set B: 61,64,74,85,x

Data set A and data set B each contain 5 numbers. If the mean of data set A is equal to the mean of data set B, what is the value of x ?

A. 77

B. 85

C. 86

D. 95

ID: 8736334b Answer

Correct Answer: C

Rationale

Choice C is correct. The mean of a data set is found by dividing the sum of the values in the data set by the number of values in the data set. Therefore, the mean of data set A is $\frac{72+73+73+76+76}{5}$, which simplifies to 74. The mean of data set B is represented by the equation $\frac{61+64+74+85+x}{5}$, or $\frac{284+x}{5}$. It's given that the mean of data set A is equal to the mean of data set B. Therefore, the equation $74=\frac{284+x}{5}$ can be used to solve for x. Multiplying both sides of this equation by 5 yields $370=284+x$. Subtracting 284 from both sides of this equation yields $86=x$.

Choices A, B, and D are incorrect and may result from calculation errors.

Question Difficulty: Easy

Question ID 35bec412

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 35bec412

$73, 74, 75, 77, 79, 82, 84, 85, 91$

What is the median of the data shown?

ID: 35bec412 Answer

Correct Answer: 79

Rationale

The correct answer is 79. The median of a data set with an odd number of values is the middle value of the set when the values are ordered from least to greatest. Because the given data set consists of nine values that are ordered from least to greatest, the median is the fifth value in the data set. Therefore, the median of the data shown is 79.

Question Difficulty: Easy

Question ID 12dae628

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 12dae628

$2, 9, 14, 23, 32$

What is the mean of the data shown?

A. 14

B. 16

C. 17

D. 32

ID: 12dae628 Answer

Correct Answer: B

Rationale

Choice B is correct. The mean of a set of data values is the sum of all the data values divided by the number of data values in the set. The sum of the data values shown is $2 + 9 + 14 + 23 + 32$, or 80. Since there are 5 data values in the set, the mean of the data shown is $\frac{80}{5}$, or 16.

Choice A is incorrect. This is the median, not the mean, of the data shown.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect. This is the maximum, not the mean, of the data shown.

Question Difficulty: Easy

Question ID 4b09f783

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 4b09f783

A list of 10 data values is shown.

$6, 8, 16, 4, 17, 26, 8, 5, 5, 5$

What is the mean of these data?

ID: 4b09f783 Answer

Correct Answer: 10

Rationale

The correct answer is 10. The mean of a data set is calculated by dividing the sum of the data values by the number of data values in the data set. For this data set, the mean can be calculated as $\frac{6+8+16+4+17+26+8+5+5+5}{10}$, which is equivalent to $\frac{100}{10}$, or 10.

Question Difficulty: Easy

Question ID bfa8a85c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: bfa8a85c

$6, 6, 8, 8, 8, 10, 21$

Which of the following lists represents a data set that has the same median as the data set shown?

A. $4, 6, 6, 6, 8, 8$

B. $6, 6, 8, 8, 10, 10$

C. $6, 8, 10, 10, 10, 12$

D. $8, 8, 10, 10, 21, 21$

ID: bfa8a85c Answer

Correct Answer: B

Rationale

Choice B is correct. If a data set contains an odd number of data values, the median is represented by the middle data value in the list when the data values are listed in ascending or descending order. Since the data set shown has 7 data values and is in ascending order, it follows that the median is the fourth data value in the list, or 8. If a data set contains an even number of data values, the median is between the two middle data values when the values are listed in ascending or descending order. Since each of the choices consists of a data set with 6 data values in ascending order, it follows that the median is between the third and fourth data value. The third and fourth data values in choice B are 8 and 8. Thus, choice B represents a data set with a median of 8. Since the median of the data set shown is 8 and choice B represents a data set with a median of 8, it follows that choice B represents a data set that has the same median as the data set shown.

Choice A is incorrect. This list represents a data set with a median of 6, not 8.

Choice C is incorrect. This list represents a data set with a median of 10, not 8.

Choice D is incorrect. This list represents a data set with a median of 10, not 8.

Question Difficulty: Easy

Question ID fa7a0164

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: fa7a0164

The table below shows the high and low temperatures in Houston, Texas, during a five-day period.

Temperatures in Houston, Texas (degrees Fahrenheit)

	Monday	Tuesday	Wednesday	Thursday	Friday
High temperature	73	56	62	75	81
Low temperature	49	37	41	54	63

What was the mean low temperature, in degrees Fahrenheit, during the five-day period?

A. 48.8

B. 49

C. 59

D. 59.1

ID: fa7a0164 Answer

Correct Answer: A

Rationale

Choice A is correct. The mean low temperature can be calculated by finding the sum of the low temperatures for all the days shown in the table, 49 + 37 + 41 + 54 + 63 = 244, and then dividing the sum by the number of days the temperature was recorded, $244 \div 5 = 48.8$.

Choice B is incorrect. This may be the result of choosing the median rather than calculating the mean. Choices C and D are incorrect and may be the result of calculation errors.

Question Difficulty: Easy

Question ID 708590d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 708590d7

Data set A: 1, 2, 3, 4, 5, 6, 7
Data set B: 1, 1, 2, 2, 3, 3, 4

Which of the following statements correctly compares the means of data set A and data set B?

A. The mean of each data set is 2.

B. The mean of each data set is 4.

C. The mean of data set A is less than the mean of data set B.

D. The mean of data set A is greater than the mean of data set B.

ID: 708590d7 Answer

Correct Answer: D

Rationale

Choice D is correct. The mean of a data set is found by dividing the sum of the values in the data set by the number of values in the data set. Therefore, the mean of data set A is $\frac{1+2+3+4+5+6+7}{7}=\frac{28}{7}$, or 4. The mean of data set B is $\frac{1+1+2+2+3+3+4}{7}=\frac{16}{7}$, or approximately 2.2857. Therefore, the mean of data set A is greater than the mean of data set B.

Alternate approach: Data set A and data set B are both ordered from least to greatest value. Besides the first value in each data set, which is 1, each value in ordered data set B is less than the respective value in ordered data set A. Therefore, conceptually, the mean of data set A must be greater than the mean of data set B.

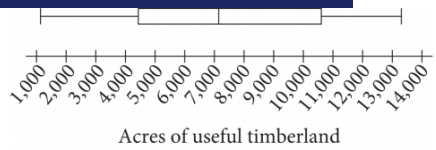
Choices A, B, and C are incorrect and may result from various misconceptions or miscalculations.

Question Difficulty: Easy

Question ID 374b18f9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 374b18f9



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

ID: 374b18f9 Answer

Correct Answer: B

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

Question ID c54b92a2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: c54b92a2

A study was conducted on the production rates for a company that produces tractor wheels. The table below shows the number of wheels made during 11 consecutive one-hour production periods.

One-hour period	Number of wheels made
A	24
B	24
C	21
D	21
E	21
F	19
G	24
H	24
I	19
J	22
K	23

What is the range of the number of wheels made for the 11 one-hour periods?

A. 5.5

B. 5.0

C. 4.5

D. 4.0

ID: c54b92a2 Answer

Correct Answer: B

Rationale

Choice B is correct. Range is defined as the difference between the greatest and least values from a set of data. The greatest number of wheels made during a one-hour period was 24 wheels. The least number of wheels was 19. Hence, the range is $24 - 19 = 5$, or 5.0.

Choices A, C, and D are incorrect and may be the result of arithmetic errors or incorrectly identifying the greatest or least number of wheels made during a one-hour period.

Question Difficulty: Easy

Question ID d1db8def

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: d1db8def

Response	Frequency
Once a week or more	3
Two or three times a month	16
About once a month	26
A few times a year	73
Almost never	53
Never	29
Total	200

The table gives the results of a survey of 200 people who were asked how often they see a movie in a theater. How many people responded either “never” or “almost never”?

A. 24

B. 53

C. 82

D. 118

ID: d1db8def Answer

Correct Answer: C

Rationale

Choice C is correct. The table gives the results of 200 people who were asked how often they see a movie in a theater. The table shows that 29 people responded “never” and 53 people responded “almost never.” Therefore, $29 + 53$, or 82, people responded either “never” or “almost never.”

Choice A is incorrect. This is the difference between the number of people who responded “almost never” and the number of people who responded “never.”

Choice B is incorrect. This is the number of people who responded “almost never” but doesn't include those who responded “never.”

Choice D is incorrect. This is the number of people who responded something other than “never” or “almost never,” rather than the number of people who responded either “never” or “almost never.”

Question Difficulty: Easy

Question ID 4bb25495

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 4bb25495

Five Smallest Countries in 2016

Country	Land area (square kilometers)
Monaco	2.0
Nauru	21
San Marino	61
Tuvalu	26
Vatican City	0.44

The table above shows the land area, in square kilometers, of the five smallest countries of the world in 2016. Based on the table, what is the mean land area of the 5 smallest countries in 2016, to the nearest square kilometer?

A. 20

B. 22

C. 61

D. 110

ID: 4bb25495 Answer

Correct Answer: B

Rationale

Choice B is correct. The mean land area of these 5 countries is equal to the sum of the land areas of these countries, or $2.0+21+61+26+0.44$, divided by the number of countries in the table, 5, or $\frac{2.0+21+61+26+0.44}{5}$. Combining like terms in the numerator yields $\frac{110.44}{5}$, which simplifies to 22.088 square kilometers. This value, when rounded to the nearest square kilometer, is 22.

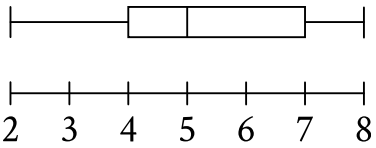
Choice A is incorrect and may result from a calculation error. Choice C is incorrect. This is the greatest land area of the 5 countries in the table. Choice D is incorrect. This is the sum of the land areas of the 5 countries in the table, rounded to the nearest square kilometer.

Question Difficulty: Easy

Question ID 57f45509

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 57f45509



The box plot summarizes 15 data values. What is the median of this data set?

A. 2

B. 3

C. 5

D. 8

ID: 57f45509 Answer

Correct Answer: C

Rationale

Choice C is correct. The median of a data set represented in a box plot is given by the vertical line within the box. In the given box plot, the vertical line within the box occurs at 5. Therefore, the median of this data set is 5.

Choice A is incorrect. This is the minimum value of the data set.

Choice B is incorrect and may result from conceptual errors.

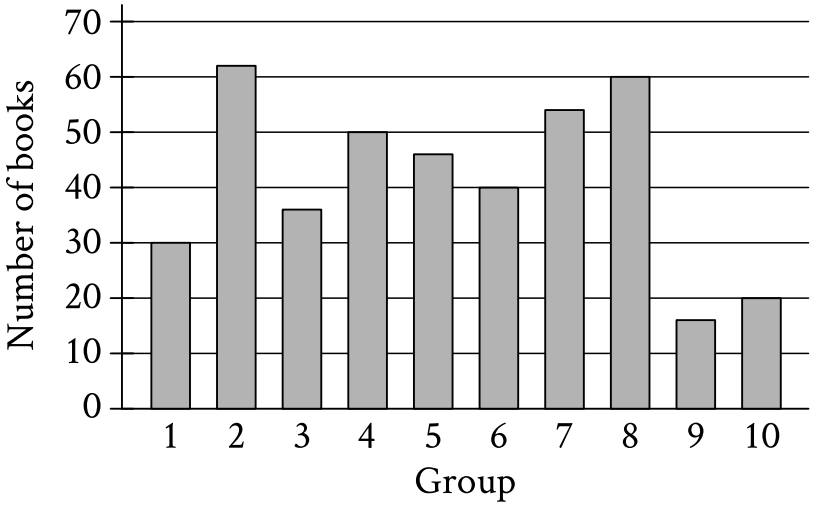
Choice D is incorrect. This is the maximum value of the data set.

Question Difficulty: Easy

Question ID 79340403

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 79340403



The bar graph shows the distribution of 414 books collected by 10 different groups for a book drive. How many books were collected by group 1?

ID: 79340403 Answer

Correct Answer: 30

Rationale

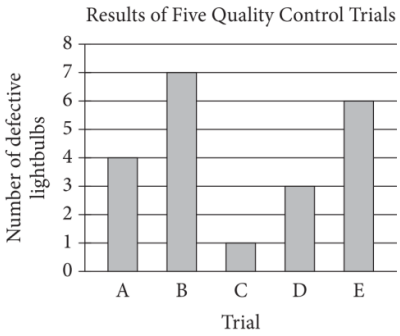
The correct answer is 30. The height of each bar in the bar graph shown represents the number of books collected by the group specified at the bottom of the bar. The bar for group 1 reaches a height of 30. Therefore, group 1 collected 30 books.

Question Difficulty: Easy

Question ID a9647302

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: a9647302



For quality control, a company that manufactures lightbulbs conducted five different trials. In each trial, 500 different lightbulbs were tested. The bar graph above shows the number of defective lightbulbs found in each trial. What is the mean number of defective lightbulbs for the five trials?

A. 4.0

B. 4.2

C. 4.6

D. 5.0

ID: a9647302 Answer

Correct Answer: B

Rationale

Choice B is correct. The numbers of defective lightbulbs found for the five trials are 4, 7, 1, 3, and 6, respectively. The mean is therefore $\frac{4+7+1+3+6}{5}=4.2$.

Choice A is incorrect. This is the median number of defective lightbulbs for the five trials. Choice C is incorrect and may result from an arithmetic error. Choice D is incorrect and may result from mistaking the number of trials for the number of defective lightbulbs.

Question Difficulty: Easy

Question ID 869a32f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 869a32f1

The high temperature, in degrees Fahrenheit (°F), in a certain city was recorded for each of 5 days. The data are shown below.

Day	1	2	3	4	5
High temperature (°F)	81	80	81	81	82

Over this 5-day period, which of the following is NOT equal to 81°F?

A. Median of the high temperatures

B. Mean of the high temperatures

C. Mode of the high temperatures

D. Range of the high temperatures

ID: 869a32f1 Answer

Correct Answer: D

Rationale

Choice D is correct. The range of a data set is the difference between the maximum and the minimum values in the set. The maximum value among the high temperatures in the table is 82°F and the minimum value is 80°F. Therefore, the range is 82°F – 80°F = 2°F.

Choice A is incorrect. The median of a data set is the middle value when the values in the set are ordered from least to greatest. Ordering the high temperatures this way gives the list 80, 81, 81, 81, 82. Therefore, the median high temperature is 81°F. Choice B is incorrect. The mean high temperature is $\frac{81+80+81+81+82}{5}=\frac{405}{5}=81$. Choice C is incorrect. The mode is the value that occurs the greatest number of times. For the set of high temperatures shown, 81 is the value that occurs 3 times, and therefore, 81°F is the mode of the high temperatures.

Question Difficulty: Easy

Question ID 6670e407

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	■□□

ID: 6670e407

Number of High School Students Who Completed Summer Internships

High school	Year				
	2008	2009	2010	2011	2012
Foothill	87	80	75	76	70
Valley	44	54	65	76	82
Total	131	134	140	152	152

The table above shows the number of students from two different high schools who completed summer internships in each of five years. No student attended both schools. Which of the following statements are true about the number of students who completed summer internships for the 5 years shown?

1. The mean number from Foothill High School is greater than the mean number from Valley High School.
2. The median number from Foothill High School is greater than the median number from Valley High School.

A. I only

B. II only

C. I and II

D. Neither I nor II

ID: 6670e407 Answer

Correct Answer: C

Rationale

Choice C is correct. The mean of a data set is found by dividing the sum of the values by the number of values. Therefore, the mean number of students who completed summer internships from Foothill High School is $\frac{87+80+75+76+70}{5}=\frac{388}{5}$, or 77.6. Similarly, the mean number from Valley High School is $\frac{44+54+65+76+82}{5}=\frac{321}{5}$, or 64.2. Thus, the mean number from Foothill High School is greater than the mean

number from Valley High School. When a data set has an odd number of elements, the median can be found by ordering the values from least to greatest and determining the value in the middle. Since there are five values in each data set, the third value in each ordered list is the median. Therefore, the median number from Foothill High School is 76 and the median number from Valley High School is 65. Thus, the median number from Foothill High School is greater than the median number from Valley High School.

Choices A, B, and D are incorrect and may result from various misconceptions or miscalculations.

Question Difficulty: Easy