Question ID 624c15c1

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

ID: 624c15c1

Data value	Frequency
6	3
7	3
8	8
9	8
10	9
11	11
12	9
13	0
14	6

The frequency table summarizes the 57 data values in a data set. What is the maximum data value in the data set?

ID: 624c15c1 Answer

Correct Answer: 14

Rationale

The correct answer is 14. The maximum value is the largest value in the data set. The frequency refers to the number of times a data value occurs. The given frequency table shows that for this data set, the data value 6 occurs three times, the data value 7 occurs three times, the data value 8 occurs eight times, the data value 9 occurs eight times, the data value 10 occurs nine times, the data value 11 occurs eleven times, the data value 12 occurs nine times, the data value 13 occurs zero times, and the data value 14 occurs six times. Therefore, the maximum data value in the data set is 14.

Question Difficulty: Medium

Question ID a188f764

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

ID: a188f764

The list gives the mass, in grams, of 5 alpine marmots.

$4{,}010;\ 4{,}010;\ 3{,}030;\ 4{,}050;\ 3{,}050$

What is the mean mass, in grams, of these 5 alpine marmots?

ID: a188f764 Answer

Correct Answer: 3630

Rationale

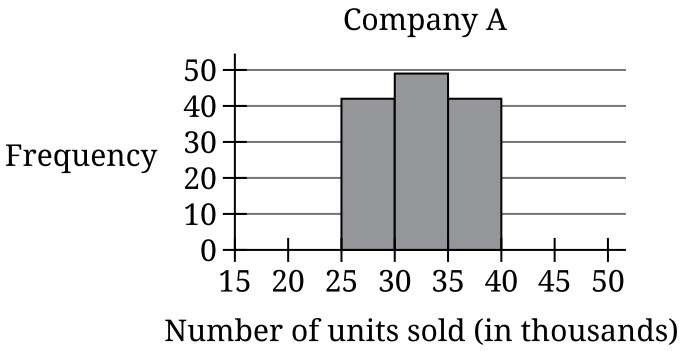
The correct answer is $3{,}630$. The mean of a data set is the sum of the values in the data set divided by the number of values in the data set. The sum of the masses, in grams, of these alpine marmots is $4{,}010 + 4{,}010 + 3{,}030 + 4{,}050 + 3{,}050$, or $18{,}150$ grams. The number of alpine marmots in the data set is 5. Therefore, the mean mass, in grams, of these 5 alpine marmots is $\frac{18{,}150}{5}$, or $3{,}630$.

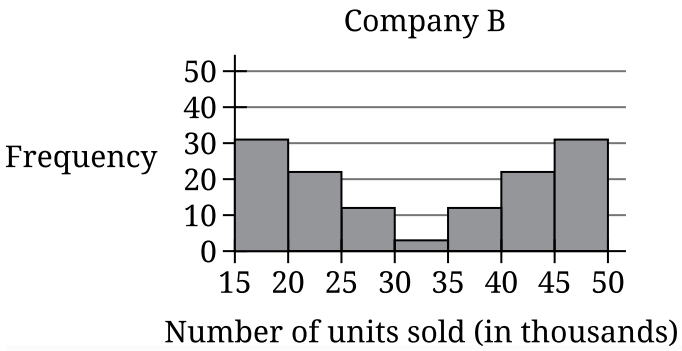
Question Difficulty: Medium

Question ID 005878b3

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

ID: 005878b3





The histograms summarize the distributions of number of units sold, in thousands, for company A and company B. Which statement best compares the standard deviations of number of units sold for these companies?

A. The standard deviation of number of units sold for company A is less than the standard deviation of number of units sold for company B.

B. The standard deviation of number of units sold for company A is greater than the standard deviation of number of units sold for company B.

C. The standard deviation of number of units sold for company A is equal to the standard deviation of number of units sold for company B.

D. There is not enough information to compare the standard deviations.

ID: 005878b3 Answer

Correct Answer: A

Rationale

Choice A is correct. Standard deviation measures the spread of a given data set from its mean. In a data set with a smaller standard deviation, there are more values close to the mean. In a data set with a greater standard deviation, there are more values farther from the mean. The two histograms shown have the same scale on the horizontal axis. Therefore, their standard deviations can be compared by visually comparing the spreads of their histograms. The distribution summarized by each histogram is symmetric. Therefore, the mean of the data set for each histogram is a

value in the middle bar of that histogram. The middle bar of each histogram has a value of at least 30 thousand units sold but less than 35 thousand units sold. Therefore, the mean of the data set for each histogram is at least 30 thousand and less than 35 thousand. The histogram for company A shows all the values in that data set are close to the mean. For company B, the histogram shows there are fewer values close to the mean and more values farther from the mean. Therefore, the standard deviation of number of units sold for company A is less than the standard deviation of number of units sold for company B.

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

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

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

Question Difficulty: Medium

Question ID 22458cc3

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

ID: 22458cc3

$23, 27, 27, 32, 35, 36, 52$

What is the range of the 7 scores shown?

ID: 22458cc3 Answer

Correct Answer: 29

Rationale

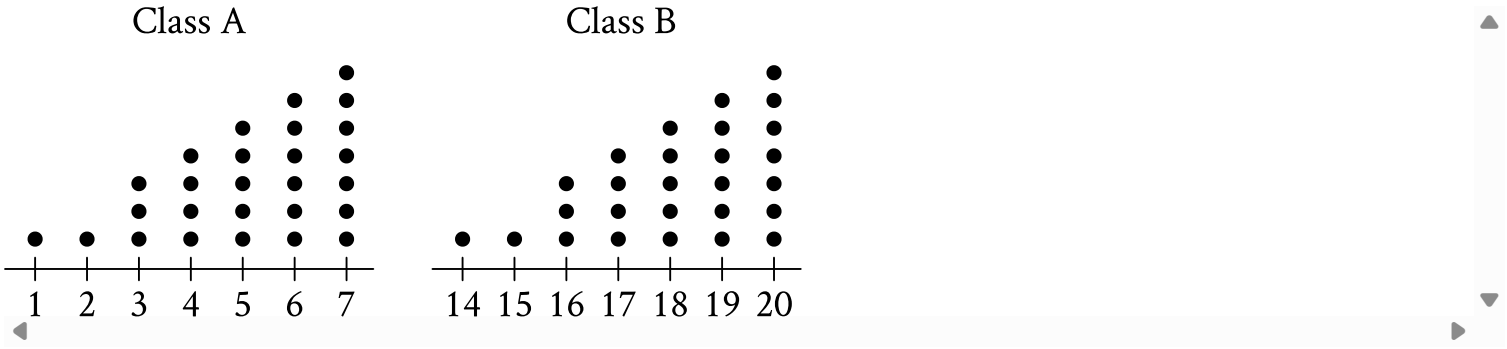
The correct answer is 29. The range of a data set is the difference between its maximum value and its minimum value. For the data set shown, the maximum score is 52 and the minimum score is 23. The difference between those scores is $52 - 23$, or 29. Therefore, the range of the 7 scores shown is 29.

Question Difficulty: Medium

Question ID a9c6d7a3

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

ID: a9c6d7a3



Each of the dot plots shown represents the number of glue sticks brought in by each student for two classes, class A and class B. Which statement best compares the standard deviations of the numbers of glue sticks brought in by each student for these two classes?

A. The standard deviation of the number of glue sticks brought in by each student for class A is less than the standard deviation of the number of glue sticks brought in by each student for class B.

B. The standard deviation of the number of glue sticks brought in by each student for class A is equal to the standard deviation of the number of glue sticks brought in by each student for class B.

C. The standard deviation of the number of glue sticks brought in by each student for class A is greater than the standard deviation of the number of glue sticks brought in by each student for class B.

D. There is not enough information to compare these standard deviations.

ID: a9c6d7a3 Answer

Correct Answer: B

Rationale

Choice B is correct. Standard deviation is a measure of the spread of a data set from its mean. The dot plot for class A and the dot plot for class B have the same shape. Thus, the frequency distributions for both class A and class B are the same. Since both class A and class B have the same frequency distribution of glue sticks brought in by each student, it follows that both class A and class B have the same spread of the number of glue sticks brought in by each student from their respective means. Therefore, the standard deviation of the number of glue sticks brought in by each student for class A is equal to the standard deviation of the number of glue sticks brought in by each student for class B.

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

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

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

Question Difficulty: Medium

Question ID cd9fa443

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

ID: cd9fa443

Data set A has 15 values and is represented by the dot plot shown. Data set B is created by adding 46 to each of the values in data set A. Which of the following correctly compares the medians and the ranges of data sets A and B?

A. The median of data set B is greater than the median of data set A, and the range of data set B is equal to the range of data set A.

B. The median of data set B is greater than the median of data set A, and the range of data set B is greater than the range of data set A.

C. The median of data set B is equal to the median of data set A, and the range of data set B is greater than the range of data set A.

D. The median of data set B is equal to the median of data set A, and the range of data set B is equal to the range of data set A.

ID: cd9fa443 Answer

Correct Answer: A

Rationale

Choice A is correct. The median is the middle value in a data set when the data are arranged in order from least to greatest. Since there are 15 values in data set A, the median is the 8th value. The 8th value is 23, so the median of data set A is 23. The range is found by subtracting the minimum value in a data set from the maximum value. The minimum value in data set A is 22 and the maximum value is 26. Therefore, the range of data set A is $26 - 22$, or 4. It's given that data set B is created by adding 46 to each of the values in data set A. Therefore, the 8th value in data set B is $23 + 46$, or 69, so the median of data set B is 69. The minimum value in data set B is $22 + 46$, or 68, and the maximum value is $26 + 46$, or 72. Therefore, the range of data set B is $72 - 68$, or 4. Since the median of data set A is 23, and the median of data set B is 69, the median of data set B is greater than the median of data set A. Since the ranges of data sets A and B are both 4, the range of data set B is equal to the range of data set A.

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

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

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

Question Difficulty: Medium

Question ID 78cc3297

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

ID: 78cc3297

The table shows the frequency of values in a data set.

Value	Frequency
19	7
21	1
23	7
25	4

What is the minimum value of the data set?

ID: 78cc3297 Answer

Correct Answer: 19

Rationale

The correct answer is 19. The minimum value of a data set is the least value in the data set. The frequency refers to the number of times a value occurs. The given table shows that for this data set, the value 19 occurs 7 times, the value 21 occurs 1 time, the value 23 occurs 7 times, and the value 25 occurs 4 times. Therefore, of the values 19, 21, 23, and 25 given in the data set, the minimum value of the data set is 19.

Question Difficulty: Medium

Question ID e8971daa

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

ID: e8971daa

$4, 10, 18, 4, 4, 5, 6, 5$

What is the median of the data set shown?

A. 4

B. 5

C. 7

D. 14

ID: e8971daa Answer

Correct Answer: B

Rationale

Choice B is correct. If a data set contains an even number of data values, when the data values are listed in ascending or descending order, the median is between the two middle values. The given data set contains 8 values. When listed in ascending order, the data set is $4, 4, 4, 5, 5, 6, 10, 18$ and the two middle values are 5 and 5. Since the two middle values are the same, the median must be 5.

Choice A is incorrect. This value is between the two middle values in the list shown, not the two middle values when the data values are listed in ascending or descending order.

Choice C is incorrect. This is the mean, not the median, of the data set.

Choice D is incorrect. This is the range, not the median, of the data set.

Question Difficulty: Medium