

Algebra 1 · Statistics: Center, Spread and Data Displays · Quiz

Common Core S-ID.A.1, S-ID.A.2, S-ID.A.3 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

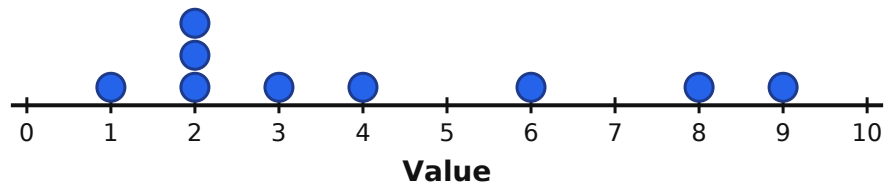
Answer these 10 multiple-choice questions on dot plots, histograms, box plots, center, spread and outliers. Each question has exactly one correct answer. Read the displays carefully, then check your choice against the explanation.

Algebra 1 Common Core: **S-ID.A.1 · S-ID.A.2 · S-ID.A.3**

Questions

Question 1

What is the median of the data shown?

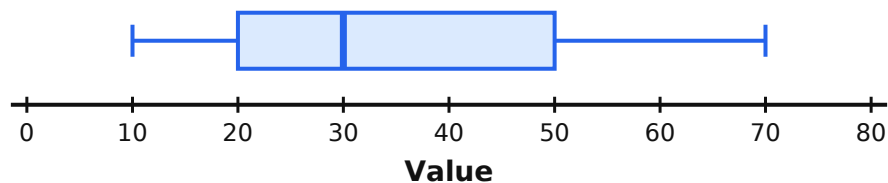


Nine data values.

- A. 2
- B. 3
- C. 4.1
- D. 5

Question 2

What is the IQR of the data in the box plot?

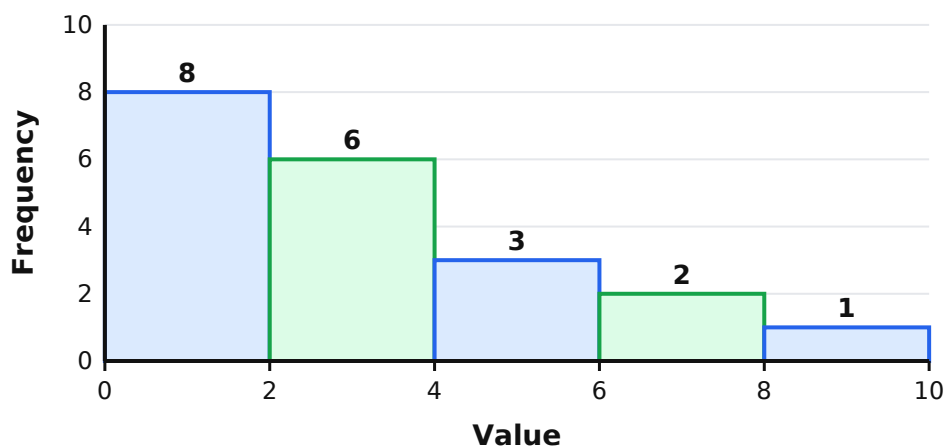


A box plot.

- A. 60
- B. 40
- C. 10
- D. 30

Question 3

Which describes the shape of the histogram?



A histogram.

- A. Skewed left
- B. Symmetric
- C. Skewed right
- D. Uniform

Question 4

Which pair of measures is best for describing skewed data?

- A. Mean and standard deviation
- B. Median and IQR
- C. Mean and IQR
- D. Median and range

Question 5

Data set A and data set B have the same mean. Set A has a standard deviation of 2 and set B has a standard deviation of 7. Which statement must be true?

- A. A's values are more spread out
- B. B's values are more spread out

- C. B has the larger median
- D. A has the larger range

Question 6

What is the mean of 12, 15, 9, 20, 24?

- A. 15
- B. 20
- C. 80
- D. 16

Question 7

One very large value is added to a data set. Which statistics change the most?

- A. The mean and the standard deviation
- B. The median and the IQR
- C. The minimum and the median
- D. None of the statistics

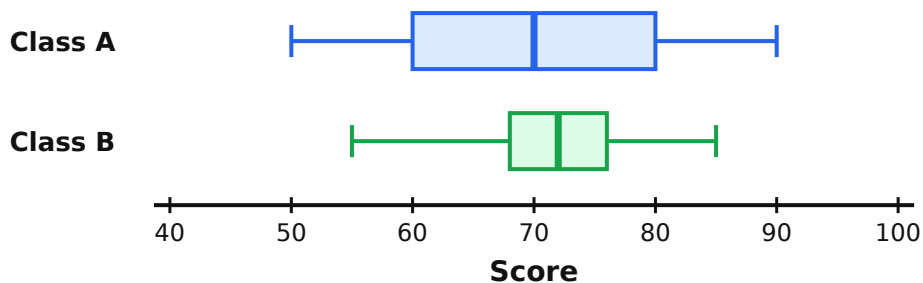
Question 8

A data set has $Q_1 = 20$ and $Q_3 = 32$. Which value is an outlier by the $1.5 \times \text{IQR}$ rule?

- A. 48
- B. 30
- C. 55
- D. 4

Question 9

Which statement do the box plots support?



Scores for two classes.

- A. Class A has the higher median
- B. Class B has the larger range
- C. Class B's middle 50% of scores is more tightly packed
- D. The classes have the same IQR

Question 10

Eight values have a mean of 5 and their squared differences from the mean add to 32. What is the standard deviation?

- A. 2
- B. 4
- C. 5.7
- D. 0.5

Answer key

1. **B** - The 9 values in order have the 5th value 3 in the middle. The mode is 2, the mean is about 4.1, and 5 is the midpoint of 1 and 9.
2. **D** - $IQR = Q_3 - Q_1 = 50 - 20 = 30$. The range is 60, which is the common mix-up.
3. **C** - The tallest bars are at the left and a tail stretches toward larger values, so the data are skewed right.
4. **B** - The median and IQR are not pulled strongly by the long tail of a skewed distribution; the mean and standard deviation are.
5. **B** - A larger standard deviation means the values are more spread out around the mean. The SD alone says nothing about the median or the range.
6. **D** - The sum is 80, and $80 \div 5 = 16$. The value 15 is the median, and 80 forgets to divide.
7. **A** - The mean and SD use every value, so an extreme value moves them a lot. The median and IQR depend on positions in the middle.
8. **C** - $IQR = 12$ and $1.5 \times 12 = 18$, so the fences are 2 and 50. Only 55 is beyond a fence.
9. **C** - Class B's IQR is 8 and Class A's is 20. Class B's median (72) is higher and its range (30) is smaller than Class A's 40.
10. **A** - $32 \div 8 = 4$ and $\sqrt{4} = 2$. The value 4 is the variance, found before taking the square root.

Remember:

- Standards S-ID.A.1, S-ID.A.2 and S-ID.A.3: represent one-variable data with dot plots, histograms and box plots, compare center and spread, and interpret shape and outliers.
- The IQR is Q_3 minus Q_1 and measures the spread of the middle 50% of the data.
- Standard deviation is a typical distance from the mean: the square root of the average squared difference.
- A value is an outlier if it is below Q_1 minus 1.5 IQR or above Q_3 plus 1.5 IQR.
- Use mean and SD for symmetric data; use median and IQR for skewed data or data with outliers.