

AP Statistics - Mean, Median, Standard Deviation and Outliers - Quiz

Common Core AP STAT 1.6, AP STAT 1.7, HSS-ID.A.2, HSS-ID.A.3 · maths-pdf.fr/en/

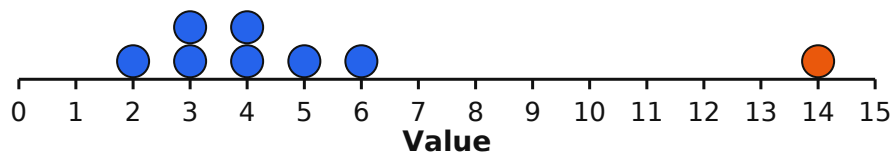
Name: _____ Class: _____ Date: ____/____/____

Ten multiple-choice questions test the meaning of the mean, median, standard deviation, and outlier rule. Read each explanation to see the typical error.

AP Statistics · Common Core State Standards: **AP STAT 1.6, AP STAT 1.7, HSS-ID.A.2, HSS-ID.A.3**

Questions

Question 1



Data with one large value.

Which statement about this dotplot is true?

- A. The mean is less than the median
- B. The mean is greater than the median
- C. The mean equals the median
- D. The standard deviation is zero

Question 2

Which statistic is resistant to outliers?

- A. Mean
- B. Range
- C. Median
- D. Standard deviation

Question 3

Every value in a data set is increased by 10. What happens to the standard deviation?

- A. It increases by 10
- B. It is multiplied by 10

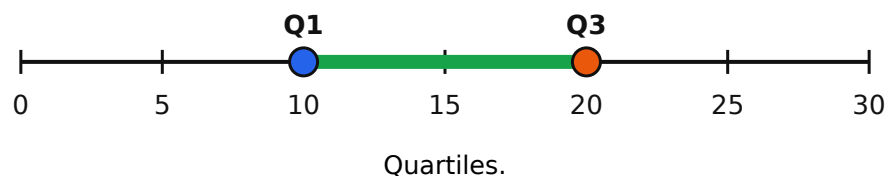
- C. It stays the same
- D. It decreases by 10

Question 4

Every value in a data set is multiplied by 3. The standard deviation was 4. What is the new standard deviation?

- A. 12
- B. 4
- C. 7
- D. 36

Question 5



Using the 1.5 IQR rule, what is the upper fence?

- A. 35
- B. 30
- C. 25
- D. 15

Question 6

The mean of 5 numbers is 12. Four of them add to 50. What is the fifth?

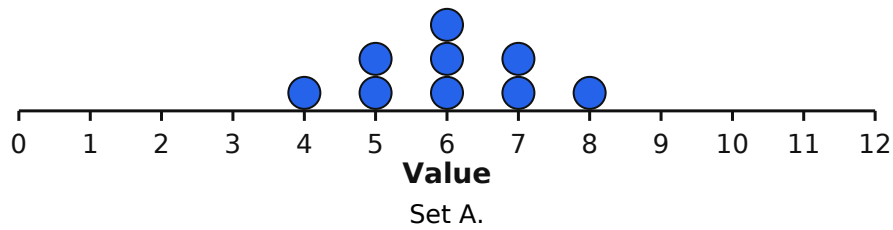
- A. 12
- B. 10
- C. 8
- D. 62

Question 7

In the standard deviation formula for a sample we divide by:

- A. n
- B. $n + 1$
- C. n squared
- D. $n - 1$

Question 8



Another data set has the same mean 6 but values from 1 to 11. Compared with this set, its standard deviation is:

- A. larger
- B. smaller
- C. the same
- D. zero

Question 9

A right-skewed data set. Which relationship is most likely?

- A. Mean < median
- B. Mean > median
- C. Mean = median
- D. Mean = mode

Question 10

Which value is the IQR of the data with $Q1 = 12$ and $Q3 = 20.5$?

- A. 32.5
- B. 16.25
- C. 20.5
- D. 8.5

Answers

1. **B** - The value 14 pulls the mean above the median 4, a typical right-skewed pattern.
2. **C** - The median depends only on the middle position. The other three use extreme values or all deviations.
3. **C** - Shifting moves all values together, so distances between values do not change.
4. **A** - Multiplying by k multiplies the standard deviation by $|k|$, so $3 \times 4 = 12$.
5. **A** - $IQR = 20 - 10 = 10$, and $20 + 1.5(10) = 35$. A common mistake is to stop at $20 + 10$.
6. **B** - The total is $5 \times 12 = 60$, and $60 - 50 = 10$.
7. **D** - The sample version uses $n - 1$ so that the sample standard deviation estimates the population value without being too small.
8. **A** - More spread out values lie farther from the mean, so the standard deviation is larger.
9. **B** - The long right tail pulls the mean up, above the median.
10. **D** - $IQR = Q3 - Q1 = 20.5 - 12 = 8.5$.

Remember

- Mean = sum divided by n ; median = middle of the ordered list.
- Skewed right: mean $>$ median; skewed left: mean $<$ median; symmetric: about equal.
- $s = \sqrt{\text{sum of squared deviations} / (n - 1)}$; $IQR = Q3 - Q1$.
- 1.5 IQR rule: outliers lie below $Q1 - 1.5 IQR$ or above $Q3 + 1.5 IQR$.
- Adding c shifts center but not spread; multiplying by k scales both by $|k|$.