

Grade 7 - Comparing Two Populations - Quiz

Common Core 7.SP.B.3, 7.SP.B.4 · maths-pdf.fr/en/

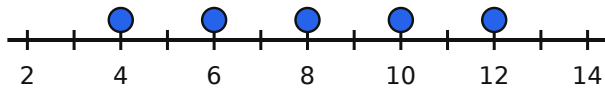
Name: _____ Class: _____ Date: ____/____/____

Answer all 10 multiple-choice questions on comparing two data distributions with dot plots and box plots using mean, median, mean absolute deviation, variability, and overlap. Pick the single best answer, then read the explanation to see why it is right and which common mistake each wrong choice shows. A score of 8 or more means you are ready for the test.

Grade 7 · Common Core State Standards: **7.SP.B.3, 7.SP.B.4**

Questions

Question 1



The mean of 4, 6, 8, 10, 12 is:

- A. 6
- B. 8
- C. 10
- D. 40

Question 2

What does a small MAD tell you?

- A. The mean is small
- B. The data values are close to the mean
- C. The data have an outlier
- D. The median is zero

Question 3

The IQR of a data set with $Q1 = 12$ and $Q3 = 20$ is:

- A. 8
- B. 32
- C. 16
- D. 4

Question 4

Two groups have means 50 and 56 and a MAD of 3 each. The difference of means is how many MADs?

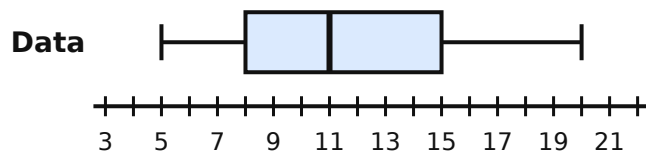
- A. 2
- B. 6
- C. 3
- D. 18

Question 5

Which statistic is best when a data set has an extreme outlier?

- A. Mean
- B. Median
- C. Range
- D. Sum

Question 6

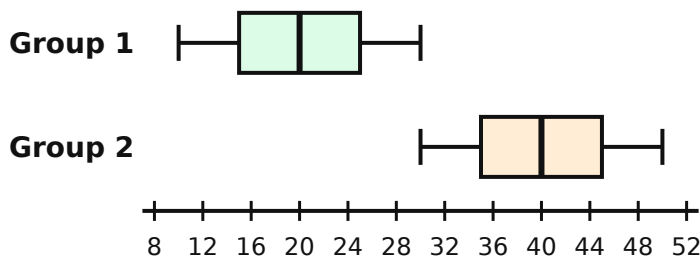


A box plot has minimum 5, Q1 8, median

11, Q3 15, maximum 20. What is the range?

- A. 7
- B. 10
- C. 20
- D. 15

Question 7



Which pair of box plots shows a clear

difference between two populations?

- A. Medians far apart and boxes that do not overlap
- B. Identical boxes
- C. Boxes that overlap almost completely

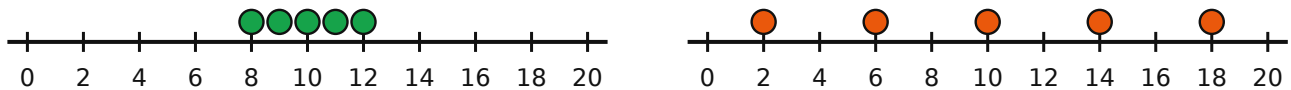
D. Equal medians

Question 8

What is the median of 3, 7, 8, 12?

- A. 7
- B. 8
- C. 7.5
- D. 6.5

Question 9



Team A has scores 8, 9, 10, 11, 12 and Team B has 2, 6, 10, 14, 18. Both have a mean of 10. Which has the greater MAD?

- A. Team A
- B. They are equal
- C. Cannot tell
- D. Team B

Question 10

Why should samples be random before comparing two populations?

- A. They make the means equal
- B. They remove all variability
- C. Random samples represent the populations fairly
- D. They guarantee the same median

Answers

1. **B** - The sum is 40 and $40 \div 5 = 8$.
2. **B** - MAD is the mean distance from the mean, so a small MAD means little spread.
3. **A** - $IQR = Q3 - Q1 = 20 - 12 = 8$.
4. **A** - $(56 - 50) \div 3 = 2$.
5. **B** - The median is not pulled by extreme values.
6. **D** - $20 - 5 = 15$. The IQR is 7.
7. **A** - A large gap in centers compared with spread signals a real difference.
8. **C** - With four values, the median is the mean of the middle two: $(7 + 8) \div 2 = 7.5$.
9. **D** - Team B's values are farther from 10, so its MAD is greater.
10. **C** - Without random sampling, the samples may be biased and the comparison unreliable.

Remember

- Center: mean or median. Spread: MAD, range, or IQR.
- MAD is the mean of the distances from the mean.
- A box plot shows the minimum, Q1, median, Q3, and maximum; $IQR = Q3 - Q1$.
- Express the difference in centers as a multiple of the variability.
- Random samples support informal inferences about populations.