

Grade 7 · Comparing Two Populations · Test

Common Core 7.SP.B.3, 7.SP.B.4 · mathovore.fr

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

This 45-minute test covers comparing two populations: medians, IQR, MAD, dot plots, box plots, and the difference of centers as a multiple of variability. It has 8 questions worth 20 points in all. Show every step, and write each answer in a full sentence when the question asks you to explain.

Test information

- **Grade:** Grade 7
- **Chapter:** Comparing Two Populations
- **Common Core:** 7.SP.B.3, 7.SP.B.4
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 3 pts; Question 3: 2 pts; Question 4: 3 pts; Question 5: 3 pts; Question 6: 3 pts; Question 7: 2 pts; Question 8: 2 pts)

Question 1: Median and IQR (2 points)

The data show the number of cans collected by seven classes: 31, 27, 35, 40, 29, 38, and 33. Find the median and the interquartile range (IQR).

Question 2: Two practice groups (3 points)

The dot plots show free throws made out of 10 by players in two practice groups.

- Find the mean of each group. (1 point)
- Find the MAD of each group. (1 point)
- Write the difference of the means as a multiple of the MAD. (1 point)

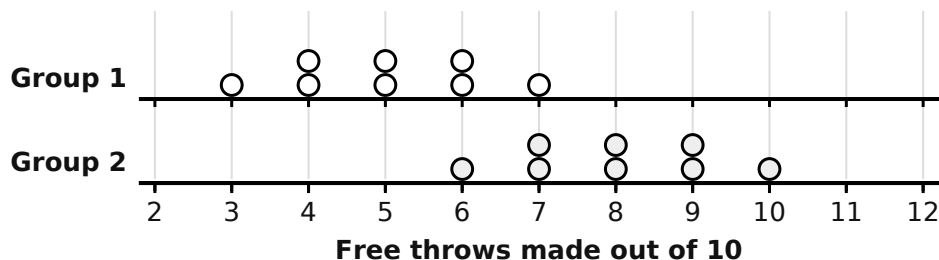


Figure. Free throws made by 8 players in each practice group.

Question 3: Text messages (2 points)

Two random samples of students sent text messages in one day. The first sample has a mean of 48 messages and the second has a mean of 66 messages. Both samples have a MAD of 9 messages.

- Write the difference of the means as a multiple of the MAD. (1 point)
- Suppose both MADs were 6 messages instead. Write the new multiple. (1 point)

Question 4: Biking clubs (3 points)

The box plots show the miles biked in one week by random samples of members of two clubs.

- Find the median of each club and the difference of the medians. (1 point)
- Find the IQR of each club. (1 point)
- Do the boxes overlap? Explain. (1 point)

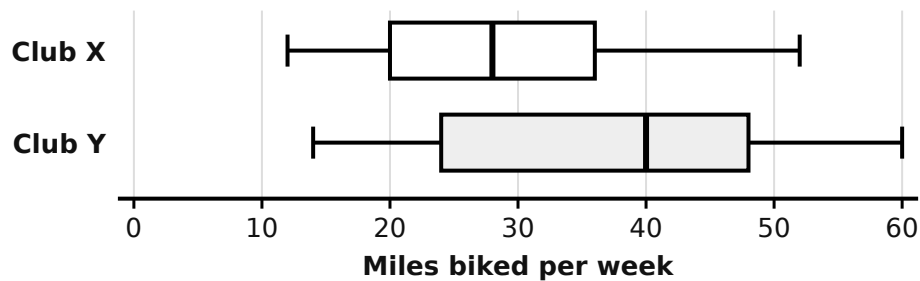


Figure. Weekly biking miles of random samples from two clubs.

Question 5: Typing speeds (3 points)

The dot plots show the words typed per minute by random samples from two classes. Both samples have a MAD of 2 words per minute.

- Find the mean of each class. (1 point)
- Write the difference of the means as a multiple of the MAD. (1 point)
- Describe the overlap of the two distributions. (1 point)

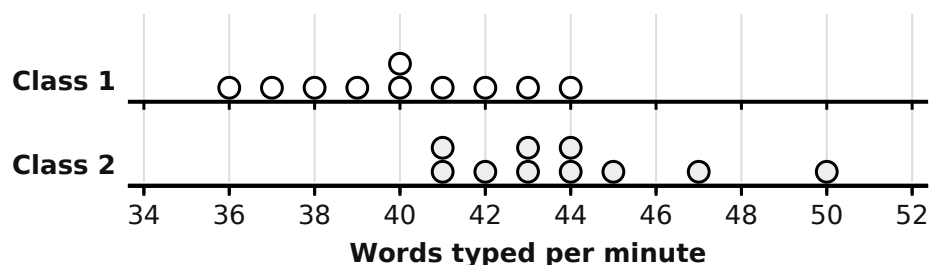


Figure. Typing speeds of two random samples of 10 students.

Question 6: Pages read (3 points)

Mei asked a random sample of 8 sixth graders and a random sample of 8 seventh graders how many pages they read last week.

Sixth grade: 23, 24, 27, 30, 31, 34, 34, 37.

Seventh grade: 32, 33, 34, 37, 38, 42, 42, 46.

- Find the mean and MAD of each sample. (2 points)
- Write a sentence that compares the two grades, using the multiple of the MAD. (1 point)

Question 7: Find the error (2 points)

Group A has a mean of 70 and a MAD of 5. Group B has a mean of 80 and a MAD of 5. Jamal says, "Group B is 10 MADs higher than Group A." Explain Jamal's mistake and give the correct multiple.

Question 8: Working backward (2 points)

Two samples have means of 120 and 150 and the same MAD. The difference of the means is 2.5 times the MAD.

- Find the MAD. (1 point)
- A third sample has a mean that is 1.5 MADs above 150. Find its mean. (1 point)