LESSON MAKER PRO

Center and Spread

Compare groups using medians and IQRs

HIGH SCHOOL · S.DA.3

S.DA.3 "Compare two or more groups by analyzing distributions. Construct appropriate parallel graphical displays of distributions. Use numerical attributes of distributions to make comparisons between distributions."

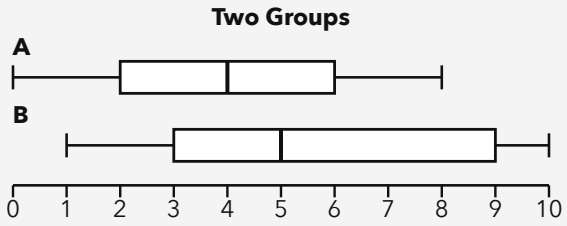
NAME _____ DATE _____

READ THE MIDDLE

In a box plot, the line inside the box marks the median, M. The box runs from Q1 to Q3, so IQR = Q3 - Q1. Compare medians for center and IQRs for the spread of the middle half.

WORKED EXAMPLE

Compare the medians and IQRs of groups A and B.



1. Read the medians: A = 4 and B = 5.
2. Find A's IQR: 6 - 2 = 4.
3. Find B's IQR: 9 - 3 = 6.

Answer: B has the higher median. A has the smaller IQR.

PRACTICE 4 problems

1 A (Q1, M, Q3): (12, 18, 24). B: (14, 20, 28). Which group has the higher median?

ANSWER _____

2 A (Q1, M, Q3): (22, 28, 38). B: (24, 30, 36). Which group has the smaller IQR?

ANSWER _____

3 A (Q1, M, Q3): (31, 37, 43). B: (32, 36, 48). Which group has the higher median? Which has the smaller IQR?

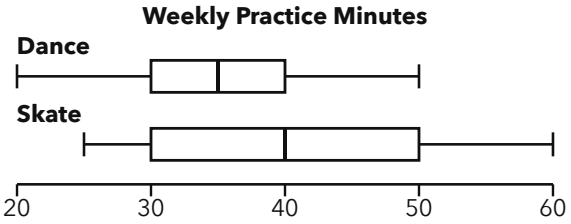
ANSWER _____

4 A (Q1, M, Q3): (42, 50, 64). B: (46, 50, 58). Are the medians equal? Which group has the smaller IQR?

ANSWER _____

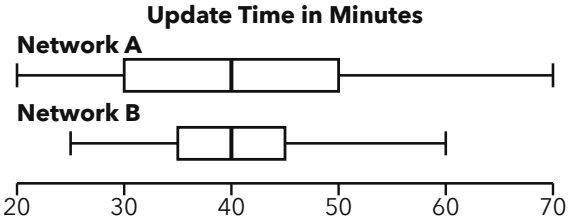
APPLY IT Show your work

1 Two clubs tracked weekly practice time. Which club has the higher median? Which has the smaller IQR?



ANSWER _____

2 Students timed game updates on two Wi-Fi networks. Which network has the smaller IQR, and by how many minutes?



ANSWER _____

CHALLENGE One step up

A (Q1, M, Q3): (22, 30, 34). B: (26, 32, 40). Every value in A increases by 15. Which group then has the higher median and smaller IQR? Explain.

WORK SPACE AND ANSWER

Center and Spread

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A (Q1, M, Q3): (12, 18, 24). B: (14, 20, 28). Which group has the higher median?	**B**
2	A (Q1, M, Q3): (22, 28, 38). B: (24, 30, 36). Which group has the smaller IQR?	**B**
3	A (Q1, M, Q3): (31, 37, 43). B: (32, 36, 48). Which group has the higher median? Which has the smaller IQR?	**A has the higher median and the smaller IQR.**
4	A (Q1, M, Q3): (42, 50, 64). B: (46, 50, 58). Are the medians equal? Which group has the smaller IQR?	**Yes, both medians are 50. B has the smaller IQR.**

PART 2 · APPLY IT

1. **Skate has the higher median. Dance has the smaller IQR.** The medians are 40 minutes for Skate and 35 minutes for Dance. Dance's IQR is 40 - 30 = 10 minutes; Skate's is 50 - 30 = 20 minutes.
2. **Network B, by 10 minutes.** Network A's IQR is 50 - 30 = 20 minutes, and Network B's is 45 - 35 = 10 minutes. The difference is 10 minutes.

CHALLENGE

A has both. Its new median is 45, greater than B's 32. Adding 15 to every value leaves A's IQR at 34 - 22 = 12, smaller than B's IQR of 40 - 26 = 14.

Accept group names without numerical work where a practice question asks only which group. In the challenge, accept any explanation that shows adding the same amount to every value changes the median but not the IQR.