LESSON MAKER PRO

Center and Spread

Compare what is typical and how much values vary.

HIGH SCHOOL · S.DA.3.2

S.DA.3.2 "Use numerical attributes of distributions to make comparisons between distributions."

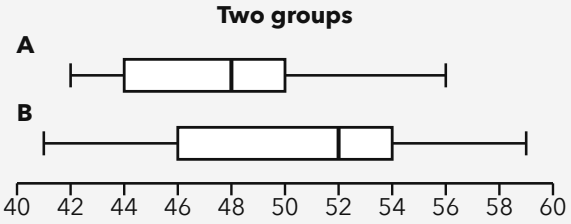
NAME _____ DATE _____

COMPARE TWO WAYS

The median shows the middle value of a distribution. The interquartile range, or IQR, equals Q3 - Q1 and shows the spread of the middle half. A higher median means a higher typical value, while a smaller IQR means less variation in the middle half.

WORKED EXAMPLE

Which group has the higher median? Which has the smaller IQR?



1. A: IQR = 50 - 44 = 6.
2. B: IQR = 54 - 46 = 8.
3. Compare medians: 52 > 48. Compare IQRs: 6 < 8.

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

PRACTICE 4 problems

1 A: Q1 = 3, median = 8, Q3 = 11. B: Q1 = 6, median = 9, Q3 = 12. Find both IQRs. Which is smaller?

ANSWER _____

2 A: Q1 = 2, median = 9, Q3 = 14. B: Q1 = 1, median = 8, Q3 = 15. Which has the higher median and smaller IQR?

ANSWER _____

3 A: 1, 3, 4, 6, 8, 9, 13. B: 0, 2, 5, 7, 10, 12, 16. Find both medians. Which is higher?

ANSWER _____

_____

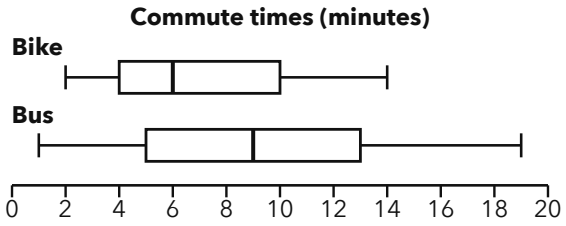
4 A: 2, 4, 6, 8, 10, 12, 14. B: 1, 5, 7, 9, 11, 13, 15. Do the sets have the same IQR? Which median is higher?

ANSWER _____

_____

APPLY IT Show your work

1 Students tracked their bike and bus commutes in minutes. Which commute has the lower median and the smaller IQR?



ANSWER _____

2 Two students made playlists. Which playlist has longer typical songs and less variation in the middle half?

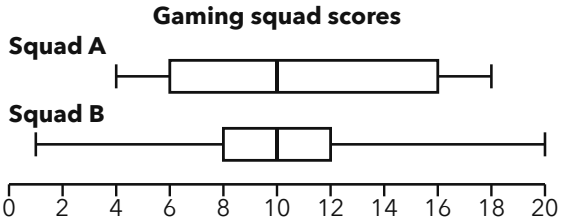
SONG LENGTHS (MINUTES)

Playlist	Q1	Median	Q3
Mix A	2	3	6
Mix B	3	4	5

ANSWER _____

CHALLENGE One step up

A student says Squad A's scores vary less because its range is smaller. Compare both ranges and IQRs. Does the middle half support the student's claim?



WORK SPACE AND ANSWER

Center and Spread

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A: Q1 = 3, median = 8, Q3 = 11. B: Q1 = 6, median = 9, Q3 = 12. Find both IQRs. Which is smaller?	**A: 8; B: 6. B has the smaller IQR.**
2	A: Q1 = 2, median = 9, Q3 = 14. B: Q1 = 1, median = 8, Q3 = 15. Which has the higher median and smaller IQR?	**A has both: median 9 and IQR 12, compared with B's median 8 and IQR 14.**
3	A: 1, 3, 4, 6, 8, 9, 13. B: 0, 2, 5, 7, 10, 12, 16. Find both medians. Which is higher?	**A: 6; B: 7. B has the higher median.**
4	A: 2, 4, 6, 8, 10, 12, 14. B: 1, 5, 7, 9, 11, 13, 15. Do the sets have the same IQR? Which median is higher?	**Yes. Both IQRs are 8. B has the higher median, 9 versus 8.**

PART 2 · APPLY IT

1. **Bike has both the lower median and the smaller IQR.** The medians are 6 minutes for bike and 9 minutes for bus. The IQRs are 10 - 4 = 6 minutes and 13 - 5 = 8 minutes.
2. **Mix B has longer typical songs and less variation in the middle half.** Mix B's median is 4 minutes versus 3 minutes for Mix A. Its IQR is 5 - 3 = 2 minutes, versus 6 - 2 = 4 minutes for Mix A.

CHALLENGE

Squad A's range is 18 - 4 = 14, smaller than Squad B's range of 20 - 1 = 19. No. Squad A's IQR is 16 - 6 = 10, larger than Squad B's IQR of 12 - 8 = 4, so A's middle half varies more.

Accept comparisons stated in words or with inequalities. For the challenge, distinguish the full range from the spread of the middle half.