

Boxplot Showdown

Compare center and spread in two data sets.

GRADE 8 • 8.PS.2.h

8.PS.2.h "Compare and analyze two data sets represented in boxplots."

NAME _____

DATE _____

READ AND COMPARE

A boxplot shows minimum | Q1 | median | Q3 | maximum. Compare medians for typical values, IQRs for the middle half, and ranges for all values. Smaller spread means more consistent data.

WORKED EXAMPLE

Boxplot A: 63 | 69 | 75 | 84 | 96.

Boxplot B: 64 | 71 | 79 | 88 | 94.

Compare the data sets.

1. A IQR = $84 - 69 = 15$.

2. B IQR = $88 - 71 = 17$.

3. B median, 79, is higher than A median, 75.

4. A range is 33, and B range is 30.

Answer: B has the higher typical value and a wider middle half. A has the greater overall range.

PRACTICE 5 problems

- 1** A: 1 | 3 | 7 | 14 | 20. B: 2 | 6 | 10 | 16 | 22.
Which boxplot has the greater median? By how much?

ANSWER _____

- 2** C: 11 | 18 | 21 | 28 | 35. D: 13 | 20 | 24 | 30 | 33. Find each IQR.

ANSWER _____

- 3** E: 0 | 2 | 6 | 11 | 18. F: 1 | 7 | 14 | 25 | 37.
Which data set has the greater range? By how much?

ANSWER _____

- 4** G: 27 | 29 | 32 | 36 | 40. H: 24 | 30 | 34 | 37 | 42. Which set is more consistent in the middle?

ANSWER _____

- 5** J: 38 | 41 | 44 | 50 | 56. K: 39 | 43 | 47 | 48 | 57. Which set has a higher typical value? Do the sets have equal ranges?

ANSWER _____

APPLY IT Show your work

- 1** Two groups recorded minutes needed to finish an escape-room challenge. Group A: 21 | 27 | 32 | 39 | 45. Group B: 22 | 28 | 36 | 44 | 47. Which group usually took longer? Which group had more variation in the middle half?

WORK SPACE

ANSWER _____

- 2** Two students tracked songs added to playlists each week. Student C: 46 | 49 | 52 | 58 | 62. Student D: 43 | 50 | 55 | 57 | 61. Who usually added more songs? Whose middle half was more consistent?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Set P: 59 | 68 | 74 | 82 | 91. Set Q: 61 | 70 | 80 | 83 | 93. A student says Set Q is more consistent because its median is higher. In exactly 2 sentences, explain what the median and IQR show.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A: 1 3 7 14 20. B: 2 6 10 16 22. Which boxplot has the greater median? By how much?	B, by 3.
2	C: 11 18 21 28 35. D: 13 20 24 30 33. Find each IQR.	C: 10. D: 10.
3	E: 0 2 6 11 18. F: 1 7 14 25 37. Which data set has the greater range? By how much?	F, by 18.
4	G: 27 29 32 36 40. H: 24 30 34 37 42. Which set is more consistent in the middle?	Neither. Both IQRs are 7.
5	J: 38 41 44 50 56. K: 39 43 47 48 57. Which set has a higher typical value? Do the sets have equal ranges?	K has the higher typical value. Yes, both ranges are 18.

PART 2 • APPLY IT

- Group B usually took longer and had more variation in the middle half.** The medians are 32 and 36, so B took longer. The IQRs are 12 and 16, so B has more middle-half variation.
- Student D usually added more songs, and Student D's middle half was more consistent.** The medians are 52 and 55, so D usually added more. The IQRs are 9 and 7, so D is more consistent in the middle half.

CHALLENGE

Set Q has a higher median, 80 compared with 74. Set Q's middle 50% is more consistent because its IQR is 13 while Set P's is 14.

Accept equivalent comparison language such as typical value for median and middle-half spread for IQR. For consistency questions, students should use IQR rather than range unless the question asks about all values.