LESSON MAKER PRO

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** _____

COMPARE TWO BOXPLOTS

Compare medians to decide which data set has a higher typical value. Compare the interquartile ranges, IQR = Q3 - Q1, to compare the spread of the middle half. A smaller IQR means the middle values are more consistent.

WORKED EXAMPLE

Boxplot A has five-number summary 2, 6, 11, 17, 24. Boxplot B has five-number summary 4, 9, 13, 16, 22. Which boxplot has the higher typical value and the smaller IQR?

1. Compare medians: A = 11 and B = 13.
2. Boxplot B has the higher median by 13 - 11 = 2.
3. Find IQRs: A = 17 - 6 = 11; B = 16 - 9 = 7.
4. Boxplot B has the smaller IQR.

Answer: Boxplot B has the higher typical value and the smaller IQR.

PRACTICE 4 problems

1 Boxplot A has five-number summary 3, 7, 10, 14, 18. Boxplot B has five-number summary 5, 8, 12, 15, 20. Which boxplot has the greater median?

ANSWER _____

2 Boxplot C has five-number summary 25, 29, 33, 37, 41. Boxplot D has five-number summary 26, 30, 35, 42, 46. Which boxplot has the smaller IQR? How much smaller is it?

ANSWER _____

3 Boxplot E has five-number summary 27, 31, 34, 39, 44. Boxplot F has five-number summary 28, 32, 38, 43, 49. Which boxplot has the greater range?

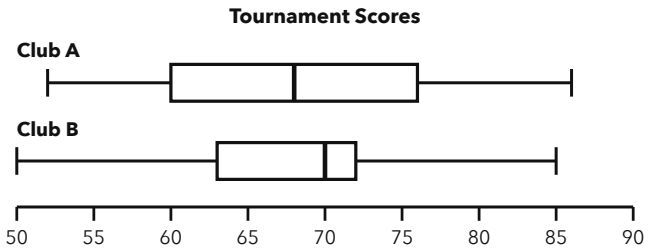
ANSWER _____

4 Boxplot G has Q1 = 51 and Q3 = 60. Boxplot H has Q1 = 50 and Q3 = 63. How much larger is the IQR of H than the IQR of G?

ANSWER _____

APPLY IT Show your work

1 Two gaming clubs recorded player scores from a tournament. Use the boxplots. Which club's middle 50% of scores was more consistent? How much smaller was its IQR?



ANSWER _____

2 Two groups made boxplots of the minutes they spent watching a new series. Group L has five-number summary 40, 54, 61, 75, 83. Group M has five-number summary 44, 50, 66, 71, 88. Which group typically watched longer, and by how many minutes?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two runners have boxplots with these five-number summaries. Runner X: 32, 46, 58, 65, 74. Runner Y: 35, 42, 58, 71, 79. Both have the same typical time. Which runner is more consistent in the middle half? Explain using IQR.

WORK SPACE AND ANSWER

ANSWER KEY

Boxplot Showdown

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Boxplot A has five-number summary 3, 7, 10, 14, 18. Boxplot B has five-number summary 5, 8, 12, 15, 20. Which boxplot has the greater median?	**Boxplot B**
2	Boxplot C has five-number summary 25, 29, 33, 37, 41. Boxplot D has five-number summary 26, 30, 35, 42, 46. Which boxplot has the smaller IQR? How much smaller is it?	**Boxplot C; its IQR is 4 less.**
3	Boxplot E has five-number summary 27, 31, 34, 39, 44. Boxplot F has five-number summary 28, 32, 38, 43, 49. Which boxplot has the greater range?	**Boxplot F**
4	Boxplot G has Q1 = 51 and Q3 = 60. Boxplot H has Q1 = 50 and Q3 = 63. How much larger is the IQR of H than the IQR of G?	**4**

PART 2 · APPLY IT

1. **Club B; its IQR was 7 points smaller.** Club A's IQR is 76 - 60 = 16. Club B's IQR is 72 - 63 = 9, so Club B's middle scores are more consistent.
2. **Group M, by 5 minutes.** Compare the medians. Group L's median is 61 minutes and Group M's median is 66 minutes.

CHALLENGE

Runner X is more consistent. Both medians are 58, but X has IQR 65 - 46 = 19 and Y has IQR 71 - 42 = 29.

Accept equivalent wording for higher median, smaller IQR, and more consistent. For the challenge, students must identify Runner X and support the choice with both IQRs or an equivalent comparison.