LESSON MAKER PRO

Spot the Spread

Compare the center and spread of two groups.

GRADE 7 · MT.7.SP.3

MT.7.SP.3 "Visually analyze two data distributions to compare measures of central tendency and variability."

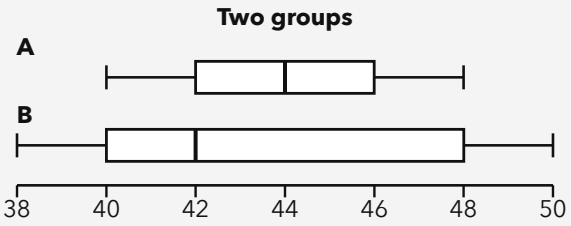
NAME _____ DATE _____

MEDIAN AND IQR

In a box plot, the line inside the box shows the median. The box edges show Q1 and Q3, so IQR = Q3 - Q1. A five-number summary lists min, Q1, median, Q3, max in that order.

WORKED EXAMPLE

Compare the medians and IQRs of A and B.



1. Read the middle lines: A has median 44; B has median 42.
2. A's IQR is 46 - 42 = 4.
3. B's IQR is 48 - 40 = 8.

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

PRACTICE 4 problems

1 Each list gives min, Q1, median, Q3, max. A: (1, 3, 5, 7, 9); B: (2, 4, 6, 8, 10). Which set has the higher median?

ANSWER _____

2 A: (2, 4, 6, 8, 12); B: (1, 3, 5, 10, 13). What is B's IQR?

ANSWER _____

3 A: (4, 6, 8, 12, 14); B: (3, 7, 9, 11, 15). Which set has the higher median? Which has the larger IQR?

ANSWER _____

_____

4 A: (0, 1, 4, 7, 9); B: (0, 3, 4, 5, 9). Do the sets have the same median? Which has the larger IQR?

ANSWER _____

_____

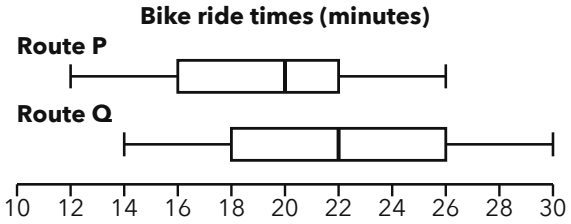
APPLY IT Show your work

1 Friends compare how many minutes they take to finish a game level. Which group has less spread in its middle half? Give both IQRs.



ANSWER _____

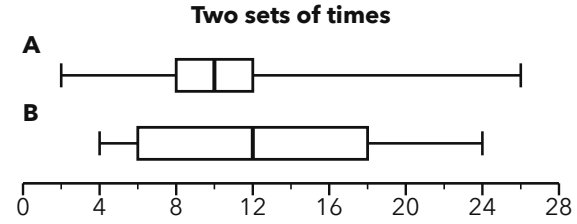
2 Students time rides on two bike routes. Which route usually takes longer, and does it also have a larger IQR? Use the medians and IQRs.



ANSWER _____

CHALLENGE One step up

Which group has the larger IQR? Which has the larger overall range? Explain using values from the plots.



WORK SPACE AND ANSWER

ANSWER KEY # Spot the Spread

GRADE 7 · MT.7.SP.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Each list gives min, Q1, median, Q3, max. A: (1, 3, 5, 7, 9); B: (2, 4, 6, 8, 10). Which set has the higher median?	**B**
2	A: (2, 4, 6, 8, 12); B: (1, 3, 5, 10, 13). What is B's IQR?	**7**
3	A: (4, 6, 8, 12, 14); B: (3, 7, 9, 11, 15). Which set has the higher median? Which has the larger IQR?	**B has the higher median; A has the larger IQR.**
4	A: (0, 1, 4, 7, 9); B: (0, 3, 4, 5, 9). Do the sets have the same median? Which has the larger IQR?	**Yes, both medians are 4. A has the larger IQR.**

PART 2 · APPLY IT

1. **Group A; its IQR is 6 minutes, and Group B's IQR is 8 minutes.** Subtract Q1 from Q3 for each group: 20 - 14 = 6 and 24 - 16 = 8. The smaller IQR belongs to Group A.
2. **Route Q usually takes longer and has a larger IQR. Its median is 22 minutes and its IQR is 8 minutes, compared with 20 minutes and 6 minutes for Route P.** Compare the median lines, then subtract the box edges: Route P has IQR 22 - 16 = 6, and Route Q has IQR 26 - 18 = 8.

CHALLENGE

B has the larger IQR: 18 - 6 = 12, compared with A's 12 - 8 = 4. A has the larger range: 26 - 2 = 24, compared with B's 24 - 4 = 20. The IQR measures the middle half, while the range measures from least to greatest.

For problems 3 and 4, accept the correct group comparisons without calculations. For the challenge, accept any explanation that correctly distinguishes the middle-half spread from the full spread.