

Boxplot Detectives

Read the clues hidden in each boxplot summary.

GRADE 8 • 8.PS.2.g

8.PS.2.g "Analyze data represented in a boxplot by making observations and drawing conclusions."

NAME _____

DATE _____

READ THE BOX

A boxplot shows the minimum, Q1, median, Q3, and maximum. The box goes from Q1 to Q3 and holds the middle 50% of the data. Find the interquartile range, or IQR, by subtracting Q1 from Q3.

WORKED EXAMPLE

A boxplot has minimum 42, Q1 48, median 55, Q3 61, and maximum 70. Find the IQR.

1. Identify Q1: 48.
2. Identify Q3: 61.
3. Subtract: $61 - 48 = 13$.

Answer: The IQR is 13.

PRACTICE 6 problems

- 1** A boxplot has minimum 2, Q1 8, median 13, Q3 20, and maximum 31. Find the IQR.

ANSWER _____

- 2** A boxplot has minimum 5, Q1 10, median 16, Q3 23, and maximum 36. Find the range.

ANSWER _____

- 3** A boxplot has minimum 4, Q1 11, median 18, Q3 26, and maximum 35. What percent of the data is at or below 18?

ANSWER _____

- 4** Data Set A has minimum 1, Q1 6, median 14, Q3 22, and maximum 28. Data Set B has minimum 3, Q1 9, median 15, Q3 19, and maximum 27. Which data set has less spread in its middle half?

ANSWER _____

- 5** A boxplot has minimum 6, Q1 14, median 21, Q3 29, and maximum 38. What interval contains the middle 50% of the data?

ANSWER _____

- 6** A boxplot has minimum 7, Q1 12, median 19, Q3 27, and maximum 34. A data value of 23 is in which 25% section of the data?

ANSWER _____

APPLY IT Show your work

1

Two groups tracked the number of minutes they practiced a skateboarding trick. Group A has minimum 8, Q1 14, median 19, Q3 26, and maximum 32. Group B has minimum 10, Q1 16, median 21, Q3 24, and maximum 30. Which group had more consistent practice times? Use the IQR to support your answer.

WORK SPACE

ANSWER _____

2

A student council surveyed how many minutes students spend creating digital art each week. The boxplot has minimum 9, Q1 17, median 24, Q3 32, and maximum 46. What percent of students spent from 17 to 32 minutes creating digital art?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A boxplot summarizes 20 game scores with minimum 2, Q1 10, median 16, Q3 25, and maximum 41. Kai says, "At least 15 scores were 25 or less." Is Kai correct? Explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A boxplot has minimum 2, Q1 8, median 13, Q3 20, and maximum 31. Find the IQR.	12
2	A boxplot has minimum 5, Q1 10, median 16, Q3 23, and maximum 36. Find the range.	31
3	A boxplot has minimum 4, Q1 11, median 18, Q3 26, and maximum 35. What percent of the data is at or below 18?	50%
4	Data Set A has minimum 1, Q1 6, median 14, Q3 22, and maximum 28. Data Set B has minimum 3, Q1 9, median 15, Q3 19, and maximum 27. Which data set has less spread in its middle half?	Data Set B
5	A boxplot has minimum 6, Q1 14, median 21, Q3 29, and maximum 38. What interval contains the middle 50% of the data?	14 to 29
6	A boxplot has minimum 7, Q1 12, median 19, Q3 27, and maximum 34. A data value of 23 is in which 25% section of the data?	The section from the median to Q3, or the 50th to 75th percentile.

PART 2 • APPLY IT

- Group B. Its IQR is 8 minutes, while Group A's IQR is 12 minutes.** Find each IQR by subtracting Q1 from Q3. The smaller IQR shows that Group B's middle 50% of times were less spread out.
- 50%** The interval from Q1 to Q3 is the box. It contains the middle 50% of the data.

CHALLENGE

Yes. Q3 is 25, so 75% of the 20 scores are at or below 25. Since 75% of 20 is 15, at least 15 scores were 25 or less.

Accept equivalent wording for the middle 50%, such as from Q1 to Q3. For the final short problem, accept "third quarter" or "between the median and Q3."