LESSON MAKER PRO

Boxplot Builder Lab

Find five-number summaries and represent data with boxplots.

GRADE 8 · 8.PS.2.d

8.PS.2.d "Organize and represent a numeric data set of no more than 20 items, using boxplots, with and without the use of technology."

NAME _____ DATE _____

BUILD A BOXPLOT

Put the data in order first. The minimum and maximum make the whisker ends, and Q1, the median, and Q3 mark the box. When there is an odd number of data values, leave the median out before finding Q1 and Q3.

WORKED EXAMPLE

Find the five-number summary for this data set: 33, 18, 24, 11, 29, 21, 14.

1. Order the data: 11, 14, 18, 21, 24, 29, 33.
2. The middle value is 21, so the median is 21.
3. The middle values of the lower and upper halves are 14 and 29.
4. The minimum is 11 and the maximum is 33.

Answer: Five-number summary: 11, 14, 21, 29, 33.

PRACTICE 6 problems

1 Find the five-number summary for: 2, 4, 7, 9, 12, 15, 17.

ANSWER _____

2 Find the five-number summary for: 1, 3, 5, 6, 8, 10, 13, 16.

ANSWER _____

3 Find the five-number summary for: 0, 2, 3, 4, 6, 7, 8, 9, 10.

ANSWER _____

4 A boxplot has minimum 3, Q1 6, median 9, Q3 13, and maximum 20. At what two values should the whiskers end?

ANSWER _____

5 Find the five-number summary for: 4, 4, 5, 7, 8, 8, 9.

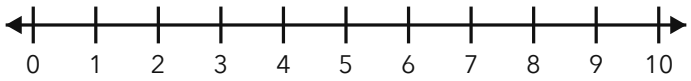
ANSWER _____

6 Data Set A is 1, 2, 4, 6, 7, 10, 12. Data Set B is 0, 3, 5, 6, 8, 12, 16. Which data set has the greater interquartile range? Give both interquartile ranges.

ANSWER _____

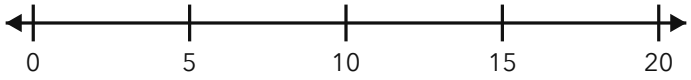
APPLY IT Show your work

1 The video game club recorded the number of games completed by seven members during a weekend: 1, 2, 4, 4, 6, 7, 9. Find the five-number summary, then draw a boxplot on the number line.



ANSWER _____

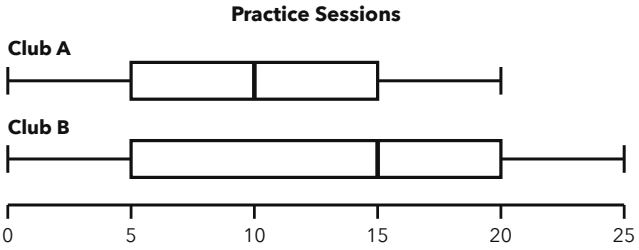
2 Eight students recorded the hours they spent making art during one week: 0, 5, 5, 10, 10, 15, 15, 20. Find the five-number summary, then draw a boxplot on the number line.



ANSWER _____

CHALLENGE One step up

The boxplots show the number of practice sessions completed by members of two clubs. Which club has the more consistent middle half of its data? Explain by comparing the interquartile ranges.



WORK SPACE AND ANSWER

ANSWER KEY

Boxplot Builder Lab

GRADE 8 · 8.PS.2.d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the five-number summary for: 2, 4, 7, 9, 12, 15, 17.	**2, 4, 9, 15, 17**
2	Find the five-number summary for: 1, 3, 5, 6, 8, 10, 13, 16.	**1, 4, 7, 11.5, 16**
3	Find the five-number summary for: 0, 2, 3, 4, 6, 7, 8, 9, 10.	**0, 2.5, 6, 8.5, 10**
4	A boxplot has minimum 3, Q1 6, median 9, Q3 13, and maximum 20. At what two values should the whiskers end?	**3 and 20**
5	Find the five-number summary for: 4, 4, 5, 7, 8, 8, 9.	**4, 4, 7, 8, 9**
6	Data Set A is 1, 2, 4, 6, 7, 10, 12. Data Set B is 0, 3, 5, 6, 8, 12, 16. Which data set has the greater interquartile range? Give both interquartile ranges.	**Data Set B. Data Set A IQR = 8, and Data Set B IQR = 9.**

PART 2 · APPLY IT

1. **Five-number summary: 1, 2, 4, 7, 9. The boxplot has whiskers at 1 and 9, a box from 2 to 7, and a median line at 4.** Order the values, then use 4 as the median. The lower-half median is 2 and the upper-half median is 7.
2. **Five-number summary: 0, 5, 10, 15, 20. The boxplot has whiskers at 0 and 20, a box from 5 to 15, and a median line at 10.** The median is the average of the two middle values, 10 and 10. Find Q1 from 0, 5, 5, 10 and Q3 from 10, 15, 15, 20.

CHALLENGE

Club A has the more consistent middle half. Its IQR is 15 - 5 = 10, while Club B's IQR is 20 - 5 = 15. Club A has the smaller IQR.

Accept equivalent fractional forms for decimal quartiles, such as 23/2 for 11.5. For drawn boxplots, accept any clear graph with the correct whiskers, box endpoints, and median line.