LESSON MAKER PRO

Find the Pattern

Use center and spread to make sense of data.

GRADE 7 · 7.D.1.1

7.D.1.1 "Design simple experiments, collect data, and calculate measures of center (mean, median, and mode) and spread (range and interquartile range). Use these quantities to draw conclusions about the data collected and make predictions."

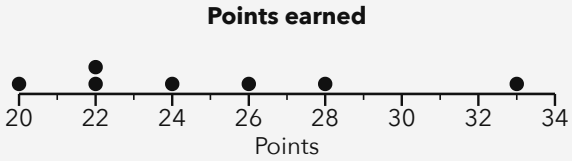
NAME _____ DATE _____

CENTER AND SPREAD

Sort the data first. The mean is the total divided by the number of values, the median is the middle value, and the mode appears most often. The range is greatest minus least. To find the interquartile range (IQR), subtract Q1, the median of the lower half, from Q3, the median of the upper half. Leave out the middle value when splitting an odd-sized set.

WORKED EXAMPLE

Find the median and IQR of the values in the dot plot.



1. Read the values in order: 20, 22, 22, 24, 26, 28, 33.
2. The middle value is 24, so the median is 24.
3. The lower half has median 22. The upper half has median 28.
4. IQR = 28 - 22 = 6.

Answer: Median: 24 points; IQR: 6 points

PRACTICE 4 problems

1 Find the mean: 3, 5, 5, 7, 10.

ANSWER _____

2 Find the median and mode: 4, 8, 4, 6, 12, 10.

ANSWER _____

3 Find the range and IQR: 1, 3, 3, 5, 7, 9, 13.

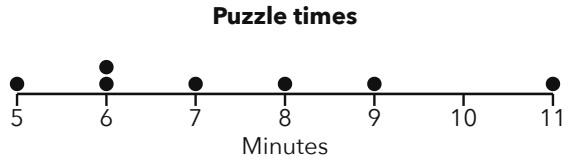
ANSWER _____

4 Find the mean and median: 2, 2, 4, 4, 6, 12.

ANSWER _____

APPLY IT Show your work

1 Students timed how long they took to solve a new puzzle. Find the median and IQR. Predict a typical time for the next student.



ANSWER _____

2 A game club tests two controllers. Scores for A are 6, 7, 8, 9, 10. Scores for B are 2, 5, 8, 11, 14. Both have a mean of 8. Find each range. Which controller gives steadier scores?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Six dance-game scores are 4, 6, 6, 8, 10, 12. A seventh score raises the mean to 9. Find the new score, median, and IQR.

WORK SPACE AND ANSWER

ANSWER KEY

Find the Pattern

GRADE 7 · 7.D.1.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the mean: 3, 5, 5, 7, 10.	**6**
2	Find the median and mode: 4, 8, 4, 6, 12, 10.	**Median: 7; mode: 4**
3	Find the range and IQR: 1, 3, 3, 5, 7, 9, 13.	**Range: 12; IQR: 6**
4	Find the mean and median: 2, 2, 4, 4, 6, 12.	**Mean: 5; median: 4**

PART 2 · APPLY IT

1. **Median: 7 minutes; IQR: 3 minutes; prediction: about 7 minutes** The middle time is 7 minutes. Q1 is 6 and Q3 is 9, so the IQR is 3 minutes; the median is a reasonable prediction.
2. **A: range 4; B: range 12. Controller A gives steadier scores.** A has range 10 - 6 = 4, while B has range 14 - 2 = 12. With equal means, A's smaller range shows less variation.

CHALLENGE

New score: 17; median: 8; IQR: 6

For the puzzle-time prediction, accept another reasonable time near the median if the student explains the choice. For the challenge, the seven scores total 63, so the missing score is 17.