

Center and Spread

Use one number to describe a data set's center and variation.

GRADE 6 • NY-6.SP.3

NY-6.SP.3 "Recognize that a measure of center for a quantitative data set summarizes all of its values with a single number while a measure of variation describes how its values vary with a single number."

NAME _____

DATE _____

TWO USEFUL NUMBERS

A measure of center, such as the mean, uses one number to describe a typical value for the whole data set. A measure of variation, such as the range, uses one number to show how spread out the values are.

WORKED EXAMPLE

Find the mean and range of 5, 9, 13, 17.

1. Add the values: $5 + 9 + 13 + 17 = 44$.
2. Divide by the number of values: $44 / 4 = 11$.
3. Subtract the least value from the greatest value: $17 - 5 = 12$.

Answer: Mean = 11; range = 12

PRACTICE 6 problems

- 1** Find the mean of 4, 6, 8, 10.

ANSWER _____

- 2** Find the range of 21, 24, 28, 31.

ANSWER _____

- 3** Set A: 30, 32, 34. Set B: 26, 32, 38. Both sets have a mean of 32. Which set has greater variation? Give its range.

ANSWER _____

- 4** A data set has a mean of 42 and a range of 11. Which number describes the center? Which number describes the variation?

ANSWER _____

- 5** Find the mean and range of 40, 44, 46, 50.

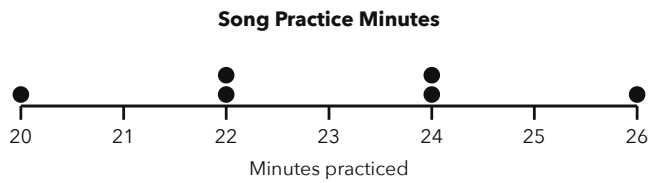
ANSWER _____

- 6** Find the mean and range of 52, 54, 56, 58.

ANSWER _____

APPLY IT Show your work

- 1 The dot plot shows the number of minutes six students practiced a song. Find the mean and range. Then tell what each number describes.



ANSWER _____

- 2 Kai and Mira recorded their scores in four rounds of a game. Who had the higher typical score? Who had more consistent scores? Use the mean and range to support your answer.

GAME SCORES

Round	Kai	Mira
1	18	20
2	22	23
3	26	25
4	30	28

ANSWER _____

CHALLENGE One step up

Data Set A: 60, 62, 64, 66, 68. Data Set B: 56, 64, 64, 64, 72. A student says both sets have the same center, but Data Set B has more variation. Is the student correct? Find each mean and range, then explain your reasoning.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the mean of 4, 6, 8, 10.	7
2	Find the range of 21, 24, 28, 31.	10
3	Set A: 30, 32, 34. Set B: 26, 32, 38. Both sets have a mean of 32. Which set has greater variation? Give its range.	Set B; its range is 12.
4	A data set has a mean of 42 and a range of 11. Which number describes the center? Which number describes the variation?	42 describes the center. 11 describes the variation.
5	Find the mean and range of 40, 44, 46, 50.	Mean = 45; range = 10
6	Find the mean and range of 52, 54, 56, 58.	Mean = 55; range = 6

PART 2 • APPLY IT

- Mean = 23 minutes; range = 6 minutes. The mean describes a typical practice time, and the range describes how much the practice times vary.** Add the six times to get 138, then divide by 6 to get 23. Subtract 20 from 26 to get a range of 6.
- They had the same typical score because each mean is 24. Mira had more consistent scores because her range is 8, which is less than Kai's range of 12.** Kai's total is 96 and Mira's total is 96, so both means are 24. Compare ranges: $30 - 18 = 12$ and $28 - 20 = 8$.

CHALLENGE

Yes. Data Set A has mean 64 and range 8. Data Set B has mean 64 and range 16. The means are the same, so the centers are the same. Data Set B has the greater range, so it has more variation.

Accept correct calculations and equivalent wording that identifies the mean as center and the range as variation. For written explanations, students should compare both the mean and the range when asked.