

Center and Spread

Compare data sets with mean, median, and range.

GRADE 7 • MA.7.DP.1.2

MA.7.DP.1.2 "Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations."

NAME _____

DATE _____

COMPARE TWO SETS

Use a measure of center, mean or median, to describe a typical value. Use range, greatest minus least, to describe spread. Compare both before making a conclusion.

WORKED EXAMPLE

Compare A: 11, 14, 17 and B: 12, 14, 16.

1. Mean A = $(11 + 14 + 17) / 3 = 14$.
2. Mean B = $(12 + 14 + 16) / 3 = 14$.
3. Range A = $17 - 11 = 6$; range B = $16 - 12 = 4$.

Answer: The sets have the same mean, but B is less variable.

PRACTICE 5 problems

- 1** PRACTICE 1. Compare A: 4, 6, 8 and B: 5, 6, 7. Find each mean and range.

ANSWER _____

- 2** PRACTICE 2. Dot plots: A: 1(x), 2(xx), 3(x), 4(x). B: 2(xx), 3(xxx). Find the median of each set. Which set has the higher typical value?

ANSWER _____

- 3** PRACTICE 3. Compare C: 18, 19, 20, 21 and D: 15, 19, 20, 24. Find each mean and range.

ANSWER _____

- 4** PRACTICE 4. Compare E: 25, 25, 25, 25 and F: 23, 24, 26, 27. Which set is more consistent? Use range.

ANSWER _____

- 5** PRACTICE 5. A scores: 30(1), 31(3), 32(1). B scores: 29(1), 31(3), 33(1). Compare the means and ranges.

ANSWER _____

APPLY IT Show your work

- 1** APPLY 1. Two groups record minutes spent reading each day. Group A: 24, 26, 28, 30, 32, 34. Group B: 20, 28, 29, 30, 31, 39. Find each mean and range. Which group reads more typically, and which group is more consistent?

WORK SPACE

ANSWER _____

- 2** APPLY 2. Two players record practice drills completed on six days. Player A: 5, 6, 6, 7, 7, 8. Player B: 0, 6, 6, 7, 7, 13. Compare the means and ranges. What conclusion fits the data?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

CHALLENGE. Group G has 21, 22, 23, 24, 25. Group H has 21, 22, 23, 24, 40. A student says H has a higher typical value because its mean is higher. Do you agree? Use center and spread to explain.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	PRACTICE 1. Compare A: 4, 6, 8 and B: 5, 6, 7. Find each mean and range.	Mean A = 6, range A = 4; mean B = 6, range B = 2. The means are equal, and B is less variable.
2	PRACTICE 2. Dot plots: A: 1(x), 2(xx), 3(x), 4(x). B: 2(xx), 3(xxx). Find the median of each set. Which set has the higher typical value?	Median A = 2; median B = 3. B has the higher typical value.
3	PRACTICE 3. Compare C: 18, 19, 20, 21 and D: 15, 19, 20, 24. Find each mean and range.	Mean C = 19.5, range C = 3; mean D = 19.5, range D = 9. The means are equal, and C is less variable.
4	PRACTICE 4. Compare E: 25, 25, 25, 25 and F: 23, 24, 26, 27. Which set is more consistent? Use range.	E is more consistent. Range E = 0 and range F = 4.
5	PRACTICE 5. A scores: 30(1), 31(3), 32(1). B scores: 29(1), 31(3), 33(1). Compare the means and ranges.	Mean A = 31, range A = 2; mean B = 31, range B = 4. The means are equal, and A is less variable.

PART 2 • APPLY IT

- Mean A = 29, range A = 10; mean B = 29.5, range B = 19. Group B reads slightly more typically, but Group A is more consistent.** Add each group's minutes and divide by 6 for the mean. Subtract the least value from the greatest value for each range.
- Mean A = 6.5, range A = 3; mean B = 6.5, range B = 13. They have the same average, but Player A is much more consistent.** Each list has a total of 39, so each mean is $39 / 6 = 6.5$. Compare the ranges to describe consistency.

CHALLENGE

No. Both medians are 23, so the typical value is the same. H's value of 40 makes its mean 26 and range 19, while G has mean 23 and range 4.

Accept equivalent comparison statements that correctly use the computed center and range. For the challenge, students should identify that the high value affects H's mean and range while both medians are 23.