

Center Gap Check

Use MAD to compare how much two data groups may overlap.

GRADE 7 • 7.SP.B.3

CCSS.Math.Content.7.SP.B.3 "Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example..."

NAME _____

DATE _____

COMPARE THE CENTERS

When two groups have similar MADs, find the difference between their means. Divide that difference by a MAD. A larger multiple means less visual overlap, while about one MAD means considerable overlap.

WORKED EXAMPLE

Group A has mean 24 and MAD 3.
Group B has mean 18 and MAD 3.
Compare the centers.

1. Find the mean difference: $24 - 18 = 6$.
2. Divide by the MAD: $6 / 3 = 2$.
3. The centers are 2 MADs apart.

Answer: About 2 MADs apart, so the separation is noticeable.

PRACTICE 5 problems

- 1** Two groups have means 35 and 30. Each MAD is 5. How many MADs apart are the means?

ANSWER _____

- 2** Two groups have means 17 and 9. Each MAD is 1. How many MADs apart are the means?

ANSWER _____

- 3** Two groups have means 54 and 47. Each MAD is 7. How many MADs apart are the means?

ANSWER _____

- 4** Two groups have means 39 and 23. Each MAD is 4. How many MADs apart are the means?

ANSWER _____

- 5** Two groups have means 44 and 33. Each MAD is 11. How many MADs apart are the means?

ANSWER _____

APPLY IT Show your work

- 1** In an esports club, Team Nova averages 96 points per match. Team Comet averages 80 points. Each team's MAD is 4 points. How many MADs apart are the averages, and what does this suggest?

WORK SPACE

ANSWER _____

- 2** During a reading challenge, one class reads an average of 31 pages per week and another reads an average of 22 pages. Both MADs are 9 pages. Compare the distributions.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Three groups have similar MADs of 4. Their means are: $A = 52$, $B = 46$, and $C = 38$. Which pair should have the most overlap? Explain using MADs.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Two groups have means 35 and 30. Each MAD is 5. How many MADs apart are the means?	1 MAD; considerable overlap is likely.
2	Two groups have means 17 and 9. Each MAD is 1. How many MADs apart are the means?	8 MADs; little overlap is likely.
3	Two groups have means 54 and 47. Each MAD is 7. How many MADs apart are the means?	1 MAD; considerable overlap is likely.
4	Two groups have means 39 and 23. Each MAD is 4. How many MADs apart are the means?	4 MADs; little overlap is likely.
5	Two groups have means 44 and 33. Each MAD is 11. How many MADs apart are the means?	1 MAD; considerable overlap is likely.

PART 2 • APPLY IT

- 4 MADs apart; little overlap is likely.** The mean difference is 16 points. Since $16 / 4 = 4$, the centers are 4 MADs apart.
- 1 MAD apart; considerable overlap is likely.** The mean difference is 9 pages. Since $9 / 9 = 1$, the centers are 1 MAD apart.

CHALLENGE

Groups A and B. Their means differ by 6, and $6 / 4 = 1 \frac{1}{2}$ MADs. This is less than B and C at 2 MADs or A and C at $3 \frac{1}{2}$ MADs, so A and B should overlap the most.

Accept equivalent forms such as 1.5 MADs for $1 \frac{1}{2}$ MADs. Predictions about overlap should use likely or expected language, since MAD comparisons give an informal visual assessment.