LESSON MAKER PRO

Compare the Groups

Use means and MADs to make careful comparisons.

GRADE 7 · 7.DSP.B.12

7.DSP.B.12 "Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context."

NAME _____ DATE _____

CENTER AND SPREAD

The mean describes a typical value. Mean absolute deviation, or MAD, is the average distance from the mean. A smaller MAD means the values are more consistent.

WORKED EXAMPLE

Compare the two groups. Which is more consistent?

VALUES IN EACH GROUP

Group A	Group B
41	39
43	41
43	45
45	47

1. Both means are 43.
2. A's MAD is (2 + 0 + 0 + 2) / 4 = 1.
3. B's MAD is (4 + 2 + 2 + 4) / 4 = 3.

Answer: Group A is more consistent because its MAD is smaller.

PRACTICE 4 problems

1 A: 0, 2, 2, 4. B: 6, 8, 8, 10. Find both means. Which group has the higher mean?

ANSWER _____

2 A: 10, 10, 14, 14. B: 8, 8, 16, 16. Find both MADs. Which group is more consistent?

ANSWER _____

3 A: 20, 22, 22, 24. B: 18, 20, 24, 26. Find both MADs. Which group is more consistent?

ANSWER _____

4 A: 30, 30, 34, 34. B: 38, 38, 38, 38. Find both means and MADs. Which group has the higher mean?

ANSWER _____

APPLY IT Show your work

1 Four students tested two game apps. The table shows loading times in seconds. Which app loads more consistently? Use MADs to explain.

LOADING TIME (SECONDS)

App A	App B
50	52
50	52
54	52
54	52

ANSWER _____

2 Two clubs tracked how many cans four members collected. Which club collected more cans per member on average and was more consistent? Use means and MADs.

CANS COLLECTED

Club A	Club B
60	54
60	54
64	66
64	66

ANSWER _____

CHALLENGE One step up

The table shows four travel times for each bus route, in minutes. Find both means and MADs. If you must arrive within 85 minutes, which route would you choose based on these trips? Explain.

TRAVEL TIME (MINUTES)

Route A	Route B
80	72
80	72
84	88
84	88

WORK SPACE AND ANSWER

ANSWER KEY

Compare the Groups

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A: 0, 2, 2, 4. B: 6, 8, 8, 10. Find both means. Which group has the higher mean?	**A: 2; B: 8. Group B has the higher mean.**
2	A: 10, 10, 14, 14. B: 8, 8, 16, 16. Find both MADs. Which group is more consistent?	**A: 2; B: 4. Group A is more consistent.**
3	A: 20, 22, 22, 24. B: 18, 20, 24, 26. Find both MADs. Which group is more consistent?	**A: 1; B: 3. Group A is more consistent.**
4	A: 30, 30, 34, 34. B: 38, 38, 38, 38. Find both means and MADs. Which group has the higher mean?	**A: mean 32, MAD 2. B: mean 38, MAD 0. Group B has the higher mean.**

PART 2 · APPLY IT

1. **App B is more consistent. Its MAD is 0 seconds, compared with 2 seconds for App A.** Both means are 52 seconds. The average distance from 52 is 2 seconds for A and 0 seconds for B.
2. **Club A did both. Its mean is 62 cans and its MAD is 2 cans; Club B's mean is 60 cans and its MAD is 6 cans.** Find each club's mean, then average the distances from that mean. Club A has the higher mean and smaller MAD.

CHALLENGE

Route A: mean 82 minutes, MAD 2 minutes. Route B: mean 80 minutes, MAD 8 minutes. Choose Route A: all four listed trips took less than 85 minutes, while two Route B trips took 88 minutes. Route A was more consistent, even though its mean was higher.

Accept equivalent wording that correctly compares the values. The route choice is based on the listed trips, not a guarantee about future trips.