



MATH WITH MR DJ

GRADE 7 · STATISTICS & PROBABILITY

COMPARING TWO DATA DISTRIBUTIONS

Today's goal: I can measure the difference between the centers of two numerical data distributions by expressing it as a multiple of a measure of variability, informally assess the degree of visual overlap of two numerical data distributions with similar variabilities and interpret the mean absolute deviation (MAD) of a set of data.



Tan



Digit



Blaze



Pi



Two pairs of groups

1 A: 18 19 20 21 22 vs B: 21 22 23 24 25

2 C: 10 15 20 25 30 vs D: 13 18 23 28 33

TURN & TALK

Both pairs differ by 3. Turn & talk: equally different?



The gap alone tells you nothing

- 1 Both pairs: means 20 and 23, gap 3.
- 2 What differs is how SPREAD OUT each group is.



BIG IDEA 2

Measure the gap in MADs

1 A and B: MAD 1.2 $\rightarrow 3 \div 1.2 = 2.5$ MADs

2 C and D: MAD 6 $\rightarrow 3 \div 6 = 0.5$ MADs

REMEMBER

Same gap. Five times the separation.



BIG IDEA 3

Look at the overlap

- 1 A ends at 22, B starts at 21 — barely overlapping.
- 2 C runs 10–30, D runs 13–33 — almost entirely overlapping.



BIG IDEA 4

A rough guide

- 1 Under 1 MAD $\rightarrow$ heavy overlap, weak difference.
- 2 2 MADs or more $\rightarrow$ clearly distinct groups.

REMEMBER

Never compare means without checking the spread.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

Find the mean of 7, 8, 9, 10, 11.

WHAT A STUDENT DID

Same shortcut.

YOUR MISSION

What went wrong? What's the right answer?



Find the mean of 7, 8, 9, 10, 11.

1 Sum 45, divide by 5 $\rightarrow$ 9.

Answer: 9



YOUR TURN

Whiteboards up!

Pick your pepper!



☞ MILD

Find the mean of 4, 5, 6, 7, 8.

#1 on your practice sheet



☞☞ MEDIUM

Find the MAD of the first group.

#3 on your practice sheet



☞☞☞ SPICY

Express the gap as a multiple of that MAD. Is the difference strong or weak?

#5 on your practice sheet



How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help



MATH WITH MR DJ

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Watch "Mean, Median, Mode, and Range Explained Clearly" on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

