



Center & variability

Two questions, two numbers

- Today: summarise a data set with single numbers — and know which one to use.

4, 5, 6, 7, 68

- What is the center of this data set?

Turn & talk: is the mean a fair answer here?

Two different jobs

- **Center** — WHERE is the data? Mean or median.
- **Variability** — HOW SPREAD OUT is it? Range or MAD.

Mean 18, median 6

- The mean is bigger than four of the five values.
- One value, 68, dragged it there.

With an outlier, the median describes the center better.

MAD — average distance from the mean

- Find the mean. Find each distance from it. Average those distances.
- 3, 4, 5, 6, 7 → distances 2, 1, 0, 1, 2 → $\text{MAD} = \frac{6}{5} = 1.2$

Distances are never negative, or they would cancel to 0.

Your turn

- Find the MAD of 2, 6, 7, 9.
- Thumbs up when you have it.

Don't answer the other question

- Asked for the CENTER of 3, 4, 5, 6, 7? That is 5.
- $7 - 3 = 4$ is the RANGE — correct arithmetic, wrong question.

A MAD of 0 is real: it means every value is identical.

Now you

- → In-class practice sheet