Center, the Mean and the Median

Mean: add and divide (the balance point). Median: the middle in order. An extreme value pulls the mean but not the median, so the median is resistant. The shape picks the center.

1 THE VOCABULARY
Words we use

Mean add all, divide by how many; the balance point.
x̄, μ the mean of a sample; the mean of a population.
Median the middle value in order; average the two middles if even.
Resistant not pulled much by extreme values.
Measure of center one number for the middle.

- Watch out for these.
- Finding the median without putting the values in order.
- Forgetting to average the two middles for an even count.
- Reporting the mean for skewed data.
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- Thinking x-bar and mu are computed differently.

2 THE METHOD
Find the center

1. MEAN add every value, divide by n.
2. MEDIAN order the values; take the middle, or average the two middles.
3. COMPARE far apart? Something pulled the mean.
4. SHAPE PICKS symmetric: mean. Skewed or an extreme value: median.
5. SAY IT a typical ... is about ...

WHY THE MEDIAN RESISTS
Moving one value far out changes the sum a lot but changes the order only a little. The mean lives in the sum; the median lives in the order.

3 CLASS PERIODS
11 schools, then Cherry Lane's 100

sum 640, n = 11: mean ≈ 58.2	add and divide
median: the 6th value, 60	in order
add 100: sum 740, n = 12: mean ≈ 61.7	the mean moved
median: average of the 6th and 7th, 60	the median did not
one value moved the mean 3.5 minutes	and the median not at all

THE SONGS
Mean ≈ 15.8, median 12. The 88 pulled the mean. Report the median: a typical student downloaded about 12 songs.

SAY IT OUT LOUD
The mean balances, the median resists. The shape picks the center.