



Center, spread & shape

Three questions to ask of any data set

- Today: describe a distribution the way a statistician would.

1, 1, 2, 2, 2, 3, 9

- Most values are low; one value is far to the right.

Turn & talk: skewed left or skewed right?

Three things to say

- **Center** — where does it cluster?
- **Spread** — highest minus lowest.
- **Shape** — symmetric, or a long tail?

Skew is named for the TAIL

- The tail stretches right → skewed RIGHT.
- The peak sits on the left, and that is normal.

Read the tail, not the hump.

The mean follows the tail

- A high outlier drags the mean UP: $\text{mean} > \text{median} \rightarrow$ skewed right.
- A low outlier drags the mean DOWN: $\text{mean} < \text{median} \rightarrow$ skewed left.
- Mean = median $\rightarrow$ symmetric.

The median barely moves. Only position counts, not size.

Your turn

- 1, 7, 8, 8, 8, 9, 9 — what shape?
- Thumbs up when you have it.

Why one number is never enough

- 2, 3, 4, 20 has a spread of 18 — but three values sit within 2 of each other.
- Spread uses only the extremes.

Always say all three: center, spread, shape.

Now you

- → In-class practice sheet