Unit 7 · Data Displays Cheat Sheet

Unit 7 focus: statistical questions, dot plots, histograms and box plots

1 KEY VOCABULARY

statistical question	Expects answers that vary.	How tall are 6th graders?
distribution	How data values are spread out.	a dot plot of quiz scores
mean	Sum ÷ number of values.	mean of 2, 4, 9 is 5
median	Middle value of ordered data.	median of 2, 4, 9 is 4
outlier	A value far from the others.	45 in 10, 12, 11, 45

2 CHOOSING A DISPLAY

Display	Best for
Dot plot	small data sets; each value shown
Histogram	large data in equal intervals
Box plot	five-number summary, spread, comparing groups

3 MEAN

Add the values, then divide by how many there are.

Example: Find the mean of 8, 12, 7, 9, 14.
Sum: 50
Divide: 50 ÷ 5
Answer: 10

4 MEDIAN

Order the data. With an even count, average the two middle values.

Example: Median of 3, 9, 4, 7, 10, 6.
Order: 3, 4, 6, 7, 9, 10
Middle two: $\frac{6+7}{2}$
Answer: 6.5

5 FIVE-NUMBER SUMMARY

Minimum, Q1, median, Q3, maximum.

Example: Data: 2, 4, 5, 7, 8, 10, 12, 15
Median: $\frac{7+8}{2} = 7.5$
Q1, Q3: medians of each half: 4.5 and 11
Answer: 2, 4.5, 7.5, 11, 15

6 QUICK REMINDERS & COMMON MISTAKES

✔ Do remember

- Order data before finding the median.
- A histogram's bars touch; intervals must be equal.
- Outliers pull the mean, not the median.

✘ Common mistakes

- Median of unordered data: order it first
- Range = largest value: range = max − min
- Reading a box plot's box as the whole data: the box is the middle 50%

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More practice: mean, median, range, IQR, MAD and the shape of a distribution

1 RANGE AND IQR

Range = max − min. IQR = Q3 − Q1 (spread of the middle half).

Example: Using 2, 4.5, 7.5, 11, 15:
Range: 15 − 2 = 13
IQR: 11 − 4.5 = 6.5

Answer: range 13, IQR 6.5

2 MEAN ABSOLUTE DEVIATION

Find the mean, the distance of each value from it, then the mean of those distances.

Example: MAD of 2, 4, 6, 8.
Mean: 5
Distances: 3, 1, 1, 3

Answer: MAD = 2

3 SHAPE OF A DISTRIBUTION

Shape	Mean vs. median
Symmetric	about equal
Skewed right (long tail right)	mean > median
Skewed left (long tail left)	mean < median

4 BEST MEASURE OF CENTER AND SPREAD

Symmetric, no outliers	**mean and MAD**
Skewed or has outliers	**median and IQR**
Comparing two box plots	**medians and IQRs**

5 DESCRIBING A DISTRIBUTION

Center	**mean or median**
Spread	**range, IQR or MAD**
Shape	**symmetric, skewed, clusters, gaps**
Unusual values	**outliers**

6 CHECK YOURSELF

- Is my question statistical (answers vary)?
- Did I order the data first?
- Did I choose the center that fits the shape?
- Does my answer include units?