Summarizing Data and Making Comparisons

Name: _____	Date: _____	Score: _____ / 24

Quick Review

To **summarize** a data set, report its **size** (how many values), a **measure of center** (mean or median), and a **measure of spread** (range, IQR, or MAD). When you **compare** two data sets, look at *both* center and spread. A higher center means the values tend to be larger; a smaller spread means the values are more consistent. Always think about **which measure fits the data**: the median resists **outliers**, while the mean uses every value. A clear summary turns a list of numbers into a story.

◇ **Example:** Class A's scores are $6, 7, 7, 8, 9, 9, 10$ and Class B's are $3, 5, 7, 7, 9, 11, 13$. Compare their centers and spreads.
⇒ First the centers. Both classes have 7 scores. Class A adds to 56, so its mean is 8; Class B adds to 55, so its mean is about 7.9 — the centers are almost the same. Now the spreads. Class A's range is $10 - 6 = 4$, while Class B's range is $13 - 3 = 10$. So even though the classes score about the same on average, Class A's scores are much more *consistent*.

Answer: similar centers; A is more consistent (smaller range)

PRACTICE

Summarize or compare the data sets as asked.

1. Mean of $6, 7, 7, 8, 9, 9, 10$ _____
2. Median of $6, 7, 7, 8, 9, 9, 10$ _____
3. Range of $6, 7, 7, 8, 9, 9, 10$ _____
4. Range of $3, 5, 7, 7, 9, 11, 13$ _____
5. Median of $3, 5, 7, 7, 9, 11, 13$ _____
6. Mean of $80, 85, 90, 90, 95$ _____
7. Median of $80, 85, 90, 90, 95$ _____
8. Mode of $80, 85, 90, 90, 95$ _____
9. Range of $80, 85, 90, 90, 95$ _____
10. Mean of $4, 6, 8, 8, 10, 12$ _____
11. Median of $4, 6, 8, 8, 10, 12$ _____
12. Range of $4, 6, 8, 8, 10, 12$ _____
13. Mean of $12, 14, 14, 16, 18, 18$ _____
14. Median of $12, 14, 14, 16, 18, 18$ _____
15. Range of $12, 14, 14, 16, 18, 18$ _____
16. Mode of $12, 14, 14, 16, 18, 18$ _____
17. Which has the larger range: {2,4,6} or {1,5,9}? _____
18. Which has the larger mean: {3,3,3} or {1,3,5}? _____
19. A set has mean 10 and another has mean 7. Which set's values tend to be larger? _____
20. Set A range 3, Set B range 12. Which set is more consistent? _____

Word Problems

21. On Monday a shop sold sandwiches priced $4, 6, 8, 8, 10, 12$ dollars. Summarize the data with its size, median, and range. _____

22. Team Red's race times (seconds) are $12, 14, 14, 16, 18, 18$ and Team Blue's are $4, 6, 8, 8, 10, 12$. Which team is faster, and which team is more consistent? Use the mean and range. _____

23. A reading log shows minutes read: $20, 25, 25, 30, 95$. Should you use the mean or the median to describe a typical day? Explain, and give that value. _____

24. Two classes took the same quiz. Class A: mean 85, range 10. Class B: mean 85, range 40. Both have the same average — what does the difference in range tell you? _____

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Answer Keys

1. $\boxed{8}$
2. $\boxed{8}$
3. $\boxed{4}$
4. $\boxed{10}$
5. $\boxed{7}$
6. $\boxed{88}$
7. $\boxed{90}$
8. $\boxed{90}$
9. $\boxed{15}$
10. $\boxed{8}$
11. $\boxed{8}$
12. $\boxed{8}$
13. $\boxed{\frac{46}{3}}$
14. $\boxed{15}$
15. $\boxed{6}$
16. $\boxed{14 \text{ and } 18}$
17. $\boxed{\{1, 5, 9\}}$
18. $\boxed{\text{equal}}$
19. $\boxed{\text{the first set}}$
20. $\boxed{\text{Set A}}$
21. $\boxed{6 \text{ values, median } \$8, \text{ range } \$8}$
22. $\boxed{\text{Blue faster; Blue more consistent}}$
23. $\boxed{\text{median} = 25 \text{ minutes}}$
24. $\boxed{\text{Class A's scores are more consistent}}$

Step-by-Step Explanations

1. The sum is 56 and there are 7 values: $56 \div 7 = 8$.
2. With 7 ordered values, the middle one is 8.
3. Maximum minus minimum: $10 - 6 = 4$.
4. Maximum minus minimum: $13 - 3 = 10$.
5. With 7 ordered values, the middle one is 7.
6. The sum is 440, and $440 \div 5 = 88$.
7. The middle value of the five ordered scores is 90.
8. The value 90 appears twice — more than any other — so it is the mode.
9. Maximum minus minimum: $95 - 80 = 15$.
10. The sum is 48, and $48 \div 6 = 8$.
11. With 6 values, average the two middle ones: $(8 + 8) \div 2 = 8$.
12. Maximum minus minimum: $12 - 4 = 8$.
13. The sum is 92, and $92 \div 6 = \frac{46}{3} \approx 15.3$.
14. Average the two middle values: $(14 + 16) \div 2 = 15$.
15. Maximum minus minimum: $18 - 12 = 6$.
16. Both 14 and 18 appear twice, so the data has two modes.
17. The first set has range 4 and the second has range 8, so $\{1, 5, 9\}$ is more spread out.
18. Both sets have a mean of 3, so their centers are equal even though the spreads differ.
19. A larger mean means a larger typical value, so the set with mean 10 tends to have larger values.
20. A smaller range means the values stay closer together, so Set A is more consistent.
21. There are 6 prices. Ordered, the two middle values are both 8, so the median is \$8. The range is $12 - 4 = \$8$.
22. Team Red's mean is $92 \div 6 \approx 15.3$ s and Team Blue's is $48 \div 6 = 8$ s, so Blue is faster. Red's range is 6 and Blue's range is 8, but the means differ so much that Blue is clearly the stronger team — and its times are still tight.
23. The value 95 is an outlier that pulls the mean up to 39. The median of 25 minutes is not affected by that outlier, so it better describes a typical day.
24. Equal means tell us the classes performed about the same on average. But Class A's smaller range shows its scores are bunched together, while Class B's scores are spread far apart.

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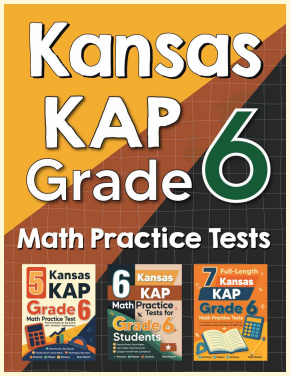

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