Comparing Center and Spread Worksheet

Algebra 1 · Common Core HSS-ID.A.2

> Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

Practice

Builds the skill step by step.

1. Class A's mean score is 78 and Class B's is 82. How much higher is Class B's mean?

2. A data set is strongly skewed. Which measure of center is usually better?

   A. the standard deviation

   B. the median

   C. the range

   D. the mean

3. Set A is 2, 4, 6, 8, 10 and Set B is 5, 6, 6, 6, 7. Both have mean 6. Which is more spread out?

   A. Set B

   B. Set A

   C. They are the same.

   D. You can't tell.

4. A box plot of Class A has Q1 = 60 and Q3 = 80. What is the IQR?

5. Class A has an IQR of 20 and Class B has an IQR of 10. Which class's middle half is less spread out?

   A. Class A

   B. They are the same.

   C. Class B

   D. You can't tell.

6. What is the median of 3, 9, 4, 7, 12?

7. What is the mean of 3, 9, 4, 7, 12?

8. What does the standard deviation measure?

   A. the most common value

   B. the middle value

   C. the number of values

   D. how spread out values are around the mean

9. Two classes have median scores of 85 and 79. What is the difference?

10. A data set is roughly symmetric with no outliers. Which pair of statistics fits best?

    A. the median and IQR

    B. the mean and standard deviation

    C. the minimum and maximum

    D. the mode and range

ALBERT

Name _____ Date _____

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On Level

Grade-level practice.

1. What is the mean of 1, 2, 2, 3, 50?

2. For 1, 2, 2, 3, 50, which measure better describes a typical value?

   A. the median, 2

   B. the mean, 11.6

   C. the range, 49

   D. the maximum, 50

3. Team A's heights have mean 70 inches and standard deviation 2. Team B's have mean 70 and standard deviation 5. Which team's heights are more consistent?

   A. Team B

   B. They are the same.

   C. You can't tell.

   D. Team A

4. The data 2, 4, 4, 4, 5, 5, 7, 9 have mean 5. What is the standard deviation (dividing by the number of values, 8)?

5. What is the standard deviation of 10, 10, 10, 10?

6. Box plot A has median 72 and IQR 10. Box plot B has median 78 and IQR 20. Compare the two data sets.

7. Each value of 2, 4, 4, 4, 5, 5, 7, 9 (standard deviation 2) is increased by 5. What is the new standard deviation?

8. Each value of 2, 4, 4, 4, 5, 5, 7, 9 (standard deviation 2) is doubled. What is the new standard deviation?

9. Household incomes in a town are skewed right. How do the mean and median compare?

   A. The mean is greater than the median.

   B. The median is greater than the mean.

   C. They are equal.

   D. You can't tell.

10. Two data sets both have mean 50. One has IQR 8 and the other has IQR 20. Which is more variable?

    A. They are equally variable.

    B. the set with IQR 8

    C. the set with IQR 20

    D. You can't tell.

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Challenge

Multi-step and word problems that stretch it.

1. The data 4, 8 and x have a mean of 7. What is x?

2. Five values have a mean of 10. A sixth value, 16, is added. What is the new mean?

3. A data set is strongly skewed with outliers. Which pair of statistics should you use to describe it?

   A. the mean and range

   B. the median and IQR

   C. the mode and mean

   D. the mean and standard deviation

4. What is the IQR of 1, 3, 5, 7, 9, 11, 13, 15?

5. Set A is 10, 20, 30 and Set B is 19, 20, 21. Which has the smaller standard deviation?

   A. Set B

   B. Set A

   C. They are equal.

   D. You can't tell.

6. Sets A and B both have median 20. A has range 20 and B has range 2. How much greater is A's range?

7. A class of 20 has a mean score of 80. One score of 100 is changed to 60. What is the new mean?

8. A street has nine homes worth about 200,000 dollars and one mansion worth 3,000,000 dollars. Explain why the median describes a typical home better than the mean.

9. Set A is 1, 2, 3, 4, 5. Set B is 10, 20, 30, 40, 50. How many times as large is B's standard deviation as A's?

10. Test scores have mean 75 and standard deviation 5. Ben scored 85. How many standard deviations above the mean is his score?