ALBERT

Name _____ Date _____

Comparing Populations Worksheet

Grade 7 · Common Core 7.SP.B.4

> Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Practice

Builds the skill step by step.

1. A random sample of 7th graders spends a mean of 6.5 hours on screens each weekend. A random sample of 5th graders spends a mean of 4.5 hours. What is the difference?

2. In random samples, 8th graders read a median of 10 books a year and 6th graders read a median of 14. Which statement is best?

   A. Every 6th grader reads more than every 8th grader.

   B. 8th graders tend to read more books.

   C. The groups read the same amount.

   D. 6th graders in the samples tend to read more books.

3. A random sample of 10 dog weights (pounds) is 20, 25, 30, 30, 35, 40, 45, 50, 55, 70. Find the median.

4. Find the mean of the sample: 12, 15, 18, 21, 24

5. Which measure of center is usually best when a data set has an outlier?

   A. Median

   B. Mean

   C. Range

   D. MAD

6. Find the range of the sample: 3, 5, 7, 9, 11

7. In random samples, Group 1's mean jump height is 20 inches and Group 2's is 25 inches. By what percent is Group 2's mean greater than Group 1's?

8. A sample of apples has a median weight of 150 g and an IQR of 20 g. A sample of oranges has a median of 180 g and an IQR of 25 g. Which fruit tends to weigh more?

   A. Apples

   B. They weigh the same

   C. There is no way to tell

   D. Oranges

9. Find the MAD of the sample: 10, 12, 14, 16, 18

10. To compare two populations, which data should you use?

    A. The first people you meet from each

    B. Random samples from each population

    C. Only the largest values from each

    D. One sample from just one population

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On Level

Grade-level practice.

1. The table shows random samples of commute times. Find the median of each sample.

Student	1	2	3	4	5	6	7
Town (min)	10	12	15	15	18	20	22
Country (min)	25	28	30	32	35	35	38

2. The table shows random samples of commute times. Find the IQR of each sample.

Student	1	2	3	4	5	6	7
Town (min)	10	12	15	15	18	20	22
Country (min)	25	28	30	32	35	35	38

3. The table shows random samples of commute times. The medians are 16.5 and 33.5 minutes. What is the difference between the medians?

Student	1	2	3	4	5	6	7
Town (min)	10	12	15	15	18	20	22
Country (min)	25	28	30	32	35	35	38

4. The table shows random samples of commute times. Which is the best inference?

Student	1	2	3	4	5	6	7
Town (min)	10	12	15	15	18	20	22
Country (min)	25	28	30	32	35	35	38

   A. Students in the country tend to have longer commutes.

   B. Every country student has a longer commute than every town student.

   C. Town commutes vary much more than country commutes.

   D. The commutes are about the same.

5. A random sample of 50 seventh graders has a mean height of 158 cm with a MAD of 6 cm. A sample of 50 fourth graders has a mean of 140 cm with a MAD of 6 cm. How many MADs apart are the means?

6. Random samples show 7th graders spend a median of 45 minutes on homework (IQR 20) and 8th graders a median of 50 minutes (IQR 30). Which is the best conclusion?

   A. The difference is small compared with the spread, so the groups are similar.

   B. 8th graders always spend more time.

   C. 7th graders always spend more time.

   D. The data are not useful.

7. A random sample of plant heights (cm) is 14, 16, 18, 18, 20, 22. Find the mean and the MAD.

8. Sample A has a mean of 72 and a MAD of 4. Sample B has a mean of 84 and a MAD of 4. How many MADs apart are the means?

9. Which statement about comparing two random samples is true?

   A. Any difference proves the populations differ.

   B. Samples can't be used to compare populations.

   C. A difference of several MADs suggests the populations really differ.

   D. Only the ranges matter.

10. A random sample of 20 cats has a mean weight of 9.8 pounds. A random sample of 20 rabbits has a mean of 4.3 pounds. What is the difference in means?

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Challenge

Multi-step and word problems that stretch it.

1. The table shows random samples of daily high temperatures. Find each city's mean and MAD.

Day	1	2	3	4	5	6
City A (°F)	68	70	72	74	76	72
City B (°F)	80	82	84	86	88	84

2. The table shows random samples of daily high temperatures. Both MADs are 2°F. How many MADs apart are the means?

Day	1	2	3	4	5	6
City A (°F)	68	70	72	74	76	72
City B (°F)	80	82	84	86	88	84

3. The table shows random samples of daily high temperatures. Which inference is best?

Day	1	2	3	4	5	6
City A (°F)	68	70	72	74	76	72
City B (°F)	80	82	84	86	88	84

   A. The cities have about the same temperatures.

   B. City A is likely warmer.

   C. There is not enough data to say anything.

   D. City B is likely warmer than City A, since the means are 6 MADs apart.

4. Sample 1 has a mean of 50 and a MAD of 5. Sample 2 has a mean of 56 and a MAD of 4. Using the larger MAD, how many MADs apart are the means?

5. Two random samples of test scores have medians of 78 and 86 and IQRs of 16 and 12. Write the difference in medians as a fraction of the larger IQR.

6. Random samples of 30 boys and 30 girls show mean reaction times of 0.42 s and 0.40 s. Both MADs are 0.05 s. Which is the best conclusion?

   A. Girls are always faster.

   B. Boys are always faster.

   C. The samples must be biased.

   D. The difference is less than one MAD, so there is little evidence of a real difference.

7. A sample of 8 values has a mean of 25. One value, 46, is an outlier and is removed. What is the mean of the other 7 values?

8. Random samples of pumpkin weights (pounds): Farm X has 8, 9, 10, 11, 12. Farm Y has 6, 9, 10, 11, 14. Both means are 10. Find each MAD.

9. Which pair of random samples gives the strongest evidence that two populations differ?

   A. Means of 30 and 32, both MADs 3

   B. Means of 30 and 45, both MADs 20

   C. Means of 30 and 30, both MADs 1

   D. Means of 30 and 45, both MADs 3

10. Random samples show 7th graders send a mean of 32 texts a day (MAD 8) and adults send a mean of 20 (MAD 6). How many of the larger MAD apart are the means?