LESSON 12.3a

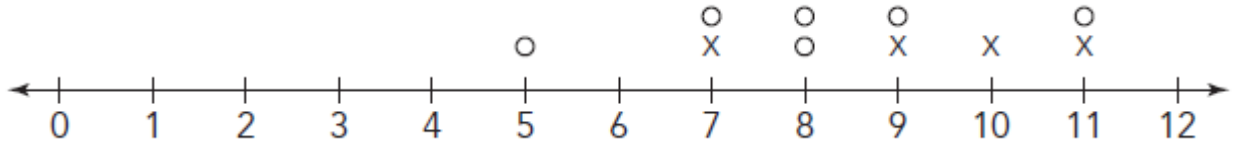
Spicy of Dark?

7.SP.3

Objective: Comparing Two Populations

Warm-Up

The dot plot shows the number of football games boys and girls attended. The "o" represents boys' responses, and the "x" represents girls' responses.



1. Estimate the mean number of games the boys attended.

2. Estimate the mean number of games the girls attended.

3. What observations can you make from your estimations of the data?

GETTING STARTED

Couch Potatoes

Several teenagers were surveyed to determine the number of hours they spend watching TV during a typical weekend. Another group was surveyed about the number of hours they spend playing outside.

Eight surveys were randomly chosen from each group.

Survey Number	Hours Spent Watching TV (Per Weekend)
1	5
2	3
3	10
4	6
5	15
6	9
7	8
8	3

Survey Number	Hours Spent Playing Outside (Per Weekend)
1	1
2	2
3	0
4	3
5	8
6	2
7	3
8	3

1. Create a dot plot for each data set.

2. Calculate the mean, median, interquartile range (IQR), and mean absolute deviation (MAD) for each data set.

3. What do these measures of center and variation tell you about the data from the surveys?

EXPLORE 1

Comparing Measures of Center and Variation

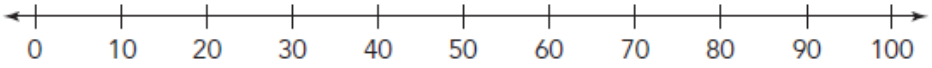
Jessica has just opened a new restaurant, Choco-Latta, which serves nothing but chocolate milk. She is experimenting with two new flavors—a spicy chocolate milk and a dark chocolate milk.

Jessica has asked you to provide a report analyzing customer feedback about the new flavors. You have conducted a survey of 20 random customers, asking each customer to rate a flavor on a scale of zero to one hundred.

Flavor	Rating	Flavor	Rating
Spicy	50	Spicy	70
Dark	20	Dark	30
Dark	30	Dark	40
Spicy	100	Spicy	70
Spicy	60	Dark	20
Spicy	80	Dark	60
Spicy	60	Spicy	80
Dark	10	Dark	20
Dark	30	Spicy	60
Dark	40	Spicy	70

1. Display the results on a dot plot. Use an "x" to represent the Spicy flavor responses, and an "o" to represent the Dark flavor responses.

Flavor Ratings



2. What observations can you make from your dot plot?

3. Describe the distribution of data values for Spicy flavor and for Dark flavor.

4. Analyze the data values on your dot plot for Spicy and Dark.

a. Estimate the mean rating for the Spicy flavor. Mark the mean on your dot plot with an "S." Explain how you determined your estimate.

b. Estimate the mean rating for the Dark flavor. Mark the mean on your dot plot with a "D." Explain how you determined your estimate.

5. Calculate the actual mean rating for the Spicy flavor.

6. Calculate the actual mean rating for the Dark flavor.

7. What observations can you make about the spread of the two data sets?

8. Calculate the mean absolute deviation for the ratings of the Spicy flavor and the Dark flavor.

9. Interpret and compare the mean absolute deviations for the Spicy flavor and the Dark flavor.

10. How can you tell by looking at your dot plot that the mean absolute deviations would be equal for the Spicy flavor and the Dark flavor?

11. Can you report on which flavor has a more consistent rating? Explain your reasoning.

WORKED EXAMPLE

Comparing the difference of means with the variation in each data set can be an important way of determining just how different two data sets are.

Consider these data sets.

5, 3, 4, 5, 10 5, 3, 100, 5, 10

Mean = 5.4 Mean = 24.6

The difference in their means is 19.2. Depending on what you are measuring, that can be a big difference.

But this difference of 19.2 is actually less than the mean absolute deviation of the right data set (30.16). This indicates that the data sets may overlap. The right data set is the same as the left one except for one number.

12. For the Spicy flavor and Dark flavor data, compare the difference in the means with each mean absolute deviation. What observations can you make?

13. What recommendation will you give to Jessica about the two new flavors?

Name: _____ Date: _____ Class: _____

Homework HW

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Objective

Comparing Two Populations

Review

1. Louie is using a computer program to randomly generate a digit from 1 to 6. Which statement most accurately describes how many times Louie's program will generate a 3 if he runs it 300 times? Explain your choice.

a. exactly 50 times

b. approximately 50 times

c. exactly 100 times

d. approximately 100 times

2. The school cafeteria has a hot food line and a cold food line for both breakfast and lunch. The cafeteria manager wants to estimate the percentage of students who select their meals from the hot food line. The manager collected data from the first 50 students who arrive for lunch and determined that 42% of students select their meals from the hot food line. Which statement is true about the cafeteria manager's sample? Explain your choice.

a. The sample is the percent of students who select foods from the hot food line.

b. The sample shows that exactly 42% of the student body select food from the hot food line.

c. The sample might not be representative of the population because it only included the first group of lunch students.