

# Assignment

## Write

Explain how to use measures of center and variation to compare two populations.

## Remember

You can use the means and mean absolute deviations to compare two populations with approximately symmetric data sets. You can use the medians and the interquartile range to compare two populations with skewed data sets.

## Practice

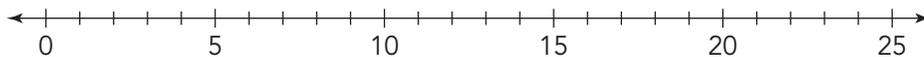
- Repeat the sampling procedure you used with the data in Activity 4.1. Choose a different line number in the random number table.
  - Record the results for 20 students.
  - Construct a combined dot plot for the two groups, using the same scale.
  - Describe the distribution of the data for each group.
  - Estimate and then calculate the mean for the data in each group.
  - Compare your new results with your results from Activity 4.1.
- Ratings are not limited to television shows alone. Ratings can also be used to show people's opinions of hotels and restaurants. One of the things that can help a restaurant get good ratings is the time it takes to be seated (the wait time) at a restaurant without reservations.
- Big Al's Steak House and Trail's End both claim to have the shortest wait times in town. To check out the claims, Ramon, a restaurant reviewer, records the time it takes to be seated without reservations. The results of wait times for 8 visits to each restaurant are shown in the table.

Big Al's Steak House Wait Times (minutes)	Trail's End Wait Times (minutes)
5	11
13	19
22	14
7	14
20	15
21	20
20	10
12	17

- Describe the populations and samples for this problem.
- Calculate the mean wait times between the two restaurants. Which restaurant seems to have faster service?

c. Complete the dot plot of the times. What do you notice?

### Wait Times



○ = Big Al's Steak House

x = Trail's End

d. Determine the median wait time for each restaurant.

e. Explain the difference in median times for the two restaurants.

f. Which measure of center would you use if:

a. you are Big Al's Steak House and want to claim you have the shortest wait time?

b. you are Trail's End and want to claim you have the shortest wait time?

c. you are a customer and want the shortest wait time?

g. Suppose another restaurant reviewer records wait times at each restaurant several times. Do you think it is possible that the wait times might be different from Ramon's wait times? Explain your reasoning.

h. How could we be more certain which restaurant has the shortest wait time?

## Stretch

Conduct your own experiment! Collect data from samples drawn from two populations. Then, analyze the data and report on your findings.

## Review

Describe the difference in means between each data set as a multiple of the mean absolute deviation of each data set.

1.  $\{1, 2, 3, 4, 5\}$   $\{5, 5, 5, 5, 5\}$

2.  $\{62, 41, 11, 60, 55\}$   $\{50, 112, 149, 131, 60\}$

A spinner has 6 equal sections, labeled 1 through 6. Determine each compound probability.

3. What is the probability that the next spin is a 2 or a 5?

4. What is the probability that the next spin is a 1, 2, or 3?

Evaluate each expression for  $x = -0.5$ .

5.  $x^4 + x^3$

6.  $-x^4 - x^3$