Unit 8 Lesson 10: Finding and Interpreting the Mean as the Balance Point

1 Which One Doesn't Belong: Division (Warm up)

Student Task Statement

Which expression does not belong? Be prepared to explain your reasoning.

$$\frac{8+8+4+4}{4} \qquad \frac{10+10+4}{4} \qquad \frac{9+9+5+5}{4} \qquad \frac{6+6+6+6+6}{5}$$

2 Travel Times (Part 1)

Student Task Statement

Here is the data set from an earlier lesson showing how long it takes for Diego to walk to school, in minutes, over 5 days. The mean number of minutes is 11.

| 12 | 7 | 13 | 9 | 14 |

1. Represent Diego's data on a dot plot. Mark the location of the mean with a triangle.

2. The mean can also be seen as a **measure of center** that balances the points in a data set. If we find the distance between every point and the mean, add the distances on each side of the mean, and compare the two sums, we can see this balancing.

a. Record the distance between each point and 11 and its location relative to 11.

time in minutes	distance from 11	left of 11 or right of 11?
12		
7		
13		
9		
14		

b. Sum of distances left of 11:_____ Sum of distances right of 11:_____

What do you notice about the two sums?

3. Can another point that is *not* the mean produce similar sums of distances? Let's investigate whether 10 can produce similar sums as those of 11.

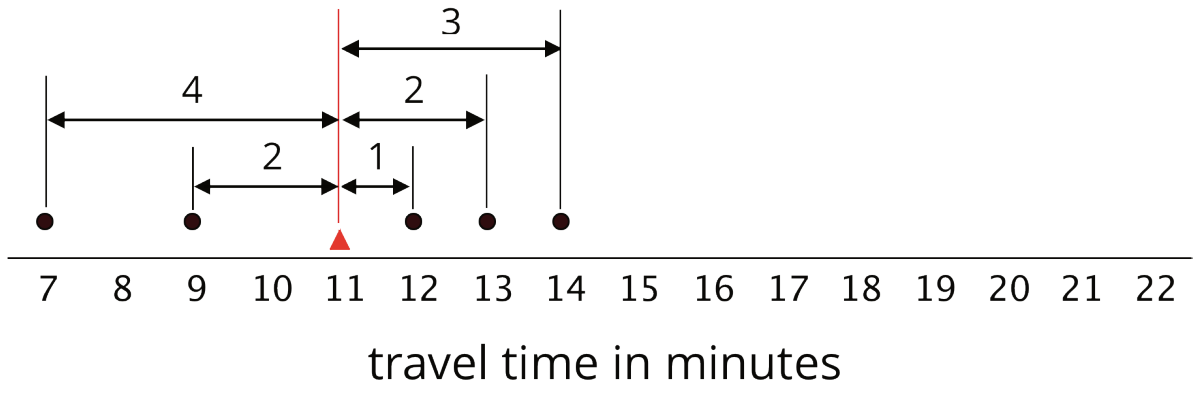a. Complete the table with the distance of each data point from 10.

time in minutes	distance from 10	left of 10 or right of 10?
12		
7		
13		
9		
14		

b. Sum of distances left of 10:_____ Sum of distances right of 10:_____

What do you notice about the two sums?

4. Based on your work so far, explain why the mean can be considered a balance point for the data set.
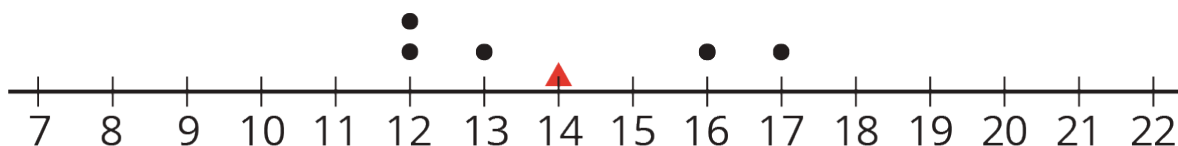
Activity Synthesis

travel time in minutes

3 Travel Times (Part 2)

Student Task Statement

1. Here are dot plots showing how long Diego's trips to school took in minutes—which you studied earlier—and how long Andre's trips to school took in minutes. The dot plots include the means for each data set, marked by triangles.
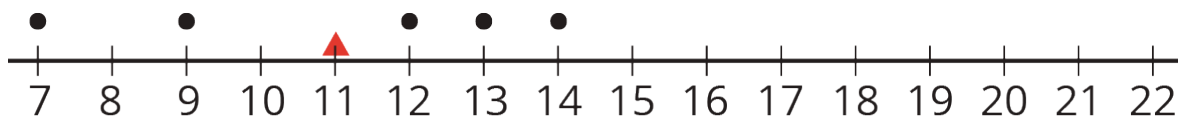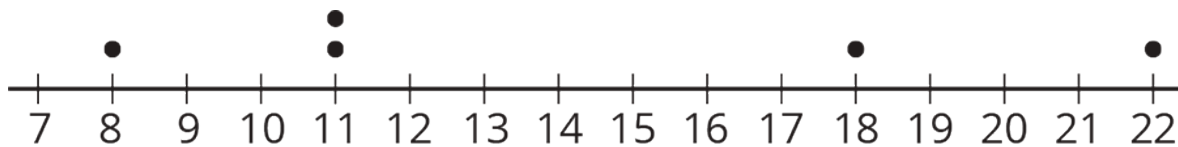
Diego's travel time in minutes

Andre's travel time in minutes

  a. Which of the two data sets has a larger mean? In this context, what does a larger mean tell us?

  b. Which of the two data sets has larger sums of distances to the left and right of the mean? What do these sums tell us about the variation in Diego's and Andre's travel times?

2. Here is a dot plot showing lengths of Lin's trips to school.
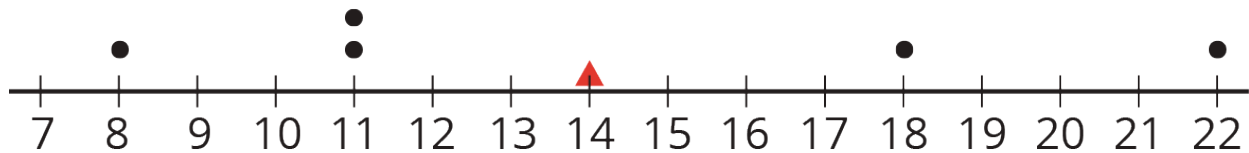
travel time in minutes

  a. Calculate the mean of Lin's travel times.

b. Complete the table with the distance between each point and the mean as well whether the point is to the left or right of the mean.

time in minutes	distance from the mean	left or right of the mean?
22		
18		
11		
8		
11		

c. Find the sum of distances to the left of the mean and the sum of distances to the right of the mean.

d. Use your work to compare Lin's travel times to Andre's. What can you say about their average travel times? What about the variability in their travel times?

Activity Synthesis

Lin's travel time in minutes

Andre's travel time in minutes