Center, the Mean and the Median

Mean: add and divide. Median: order, then the middle. Use the site's statistics tool or a graphing calculator for the larger sets. The shape picks the center.

Name _____ Date _____

Words we use

say the math word, then the plain English

WORD	PLAIN ENGLISH	WHAT YOU DO
Measure of center	One number that describes the middle of the data.	The mean or the median.
Mean (average)	The fair-share value: add all the values and divide by how many.	The balance point of the dot plot.
x-bar and mu	$\bar{x}$ is the mean of a sample; μ is the mean of a whole population.	Found the same way; the symbol says which group.
Median	The middle value when the data is in order; the average of the two middles if the count is even.	Order first, then count to the middle.
Resistant	Not pulled much by extreme values.	The median is resistant; the mean is not.
Sample, population	A part of a group; the whole group.	Decides the symbol, and in Lesson 3 the formula.

Part A By hand

DATA	IN ORDER	MEAN	MEDIAN
7, 9, 12, 4, 8			
15, 3, 9, 11, 6, 20			
2, 4, 6, 8, 10			
5, 5, 6, 30			

1. In the last row, which center better describes a typical value? Why?

Part B Class periods

Eleven schools: 45, 50, 50, 55, 55, 60, 60, 60, 65, 70, 70 minutes.

1. Mean (to one decimal) and median.

2. Add Cherry Lane's 100. New mean and median.

3. Which moved? Why does the other one resist?

Part C The songs

With the tool or a calculator: 10, 20, 12, 14, 12, 27, 88, 2, 7, 30, 16, 16, 32, 25, 15, 4, 0, 15, 6, 1, 0, 15, 12, 10, 7.

1. Mean and median.

2. Which is the better center for a typical student, and why?

3. Write a sentence in context.

Part D Symbols

1. A survey of 30 students out of 900 has a mean of 6.4 hours of sleep. Is that x-bar or mu? What if all 900 were surveyed?

2. Sketch a dot plot of 2, 3, 3, 4, 4, 4, 5, 5, 6 and mark its balance point.

Part E Exit ticket

1. Mean and median of 4, 7, 8, 9, 12.

2. A 100 minute period is added to eleven periods with median 60. What happens to the mean? To the median?

3. Why is the median resistant?

Answer key

Part A. 4, 7, 8, 9, 12: mean 8, median 8. 3, 6, 9, 11, 15, 20: mean 10.67, median 10. Mean 6, median 6. 5, 5, 6, 30: mean 11.5, median 5.5. 1. The median: the 30 pulled the mean far above the other three values.

Part B. 1. Mean 58.2, median 60. 2. Mean 61.7, median 60. 3. The mean moved; the median only uses the order, so one more high value barely shifts the middle.

Part C. 1. Mean 15.84, median 12. 2. The median: the 88 pulled the mean up. 3. A typical student downloaded about 12 songs, though one downloaded 88.

Part D. 1. x-bar; mu. 2. Balance point at the mean, 4.

Part E. 1. 8 and 8. 2. The mean rises; the median stays at 60. 3. It uses only the order of the values.