PROBLEM SOLVED
MAKING SENSE OF MATHEMATICS

Mean, Median, Mode (Part 2)
Video Script

Scene		Full Transcript
1	**Kali:**	Hey, welcome back. Last time we saw each other we discussed understanding mean, median and mode. Remember?
	Voice-Over Kali:	We analyzed the book club's data to find the number of books a typical club member read in April. We found the mode was five, the median was six, and the mean was seven.
2	**Kali:**	Let's see how the number of books a new member read influences mean, median and mode and get another *Problem Solved*.
3	**Voice-Over Kali:**	Here comes our new member, Sam. Talk about someone who likes to read.
	Kali:	Will the mean, median and mode change when we include Sam's books? Let's take a look.
4	**Voice-Over Kali:**	We'll start with the mode: the number that occurs most often. It was five before we added Sam's books. Will it change? The only way the mode will be different is if Sam read nine books. Then three people would have read five books and three people would have read nine. In situations like this, there are two modes, and the data set is described as bimodal.
5	**Voice-Over Kali:**	It looks like Sam has read more than nine books, so the mode will not change.
6	**Kali:**	Next, let's think about the mean.
	Voice-Over Kali:	Ashley, the club's president, recalculated the mean with Sam's books included.
7	**Voice-Over Kali:**	It increased from seven to eight. That didn't increase too much. How many books do you think Sam read in April? One way to determine the answer is to equalize. Since the new mean is eight, then Sam must have read eight books plus enough books to raise the mean. Eight plus 9 equals 17 books. Wow!
8	**Kali:**	Here's a second way to look at the problem.

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9	**Voice-Over Kali:**	The club read a total of 63 books without Sam's. With Sam, the tenth member of the club, the mean is eight. Now, the total number of books equals 10 times 8, or 80. The old total is 63, and the new total is 80. Eighty minus 63 equals 17, so Sam read 17 books.
10	**Kali:**	Finally, will the median change? As you know, the median is the middle number in the distribution. When there were nine members, it was easy to find.
11	**Voice-Over Kali:**	We now have ten members, so there isn't one middle number. When there is an even number of entries, the median is half way between the two middle numbers. The two middle numbers are six and eight. Seven is halfway between six and eight, so seven is the new median. The median does change.
12	**Voice-Over Kali:**	Sam read 17 books; that's a lot compared to the others. In fact, when data sets have an extreme value like this, it is referred to as an outlier. What if Sam read 97 rather than 17 books? That would be an outlier for sure, but how would it influence the mean, median and mode?
13	**Voice-Over Kali:**	Well, the mode wouldn't change, and neither would the median, but the mean would increase to 16 books.
14	**Voice-Over Kali:**	Which value, mean, median or mode, do you think is most representative of the number of books read by a typical club member? In this case, the outlier of 97 significantly increased the mean number of books read, so it no longer represents what is typical. The median better represents the number of books read by a typical club member.
15	**Kali:**	In other situations, the mean is more representative. You can see why it's important to analyze all three values when evaluating data. I think that closes the book on understanding averages and measures of center, and that's another *Problem Solved*.