

4.1 Describing Data

PRACTICE

The following represents the test scores of a sample of students from each of the Algebras' classes:

Mr. Bean	Mr. Brust	Mr. Kelly	Mr. Sullivan
85 60 88 95 90 77	100 50 78 92 100	81 82 84 90 84 83	60 92 96 88 90 92 98

1. Fill in the table, rounding values to the nearest tenth when necessary:

	Mr. Bean	Mr. Brust	Mr. Kelly	Mr. Sullivan
Mean	82.5	84	84	88
Median	86.5	92	83.5	92
Range	35	50	9	38
Standard Deviation	12.5	21.0	3.2	12.8

a. Which Algebra's sample has the highest mean?

Mr. Sullivan's sample has the highest mean.

b. If you were Mr. Brust, would you use the mean or the median to describe your data if you wanted to show your test scores were the highest?

Mr. Brust should use the median describe his data because it is higher than the mean.

c. Which Algebra's students were the most consistent? Justify by talking about the standard deviation.

Mr. Kelly's sample was the most consistent because it had the smallest standard deviation.

2. Find the value of x .

a. 3, 9, 10, 8, 7, x . The mean is 7.

$$\frac{3+9+10+8+7+x}{6} = 7$$

$$x+37 = 42$$

$$x = 5$$

$$x+37 = 7$$

b. 35, 20, x , 90 ; The median is 41.

$$20, 35, x, 90$$

$$\frac{35+x}{2} = 41$$

$$35+x = 82$$

$$x = 47$$

c. 35, 100, x , 20, 90 ; The median is 41.

$$20, 35, x, 90, 100$$

$$x = 41$$

*x is in the middle!
X must = 41!*

d. 25, 55, x , 90, 10 ; The mean is 50.

$$\frac{25+55+x+90+10}{5} = 50$$

$$x+80 = 250$$

$$x = 170$$

3. Sully LOVES going to basketball games and counting rebounds. Sully goes to the Kaiserslautern-Ramstein faculty game and counts the following rebounds during the first half:

Kaiserslautern Raiders (Rebounds in first half)	
Hemmer	1
Fairchild	5
Rodriguez	3
Powdar	13
Standiford	3

Ramstein Royals (Rebounds in first half)	
Bradley	0
Kretz	12
Hollenbeck	1
Brewster	1
Marks	6



*Mean = 5 Range = 12
Median = 3 St Dev = 4.7*

*Mean = 4 Range = 12
Median = 1 St Dev = 5.0*

a. Which of the following statements is (are) true?

- I. The rebound range is greater for Ramstein than it is for Kaiserslautern. *Not True... they are equal*
- II. The mean number of rebounds is less than 10 for both teams.
- III. The standard deviation of rebounds is greater for Ramstein.
- IV. There is greater variation in Kaiserslautern's scores. *Not true. Ktown has a smaller Standard deviation. Therefore, the variation is smaller.*
- V. None of the above statements are true.

Statements II and III are correct.

During the second half, Sully notices the following facts about the game's final stats:

- Kaiserslautern's team had a mean of 14 rebounds and a standard deviation of 0 rebounds.
- Ramstein's team had a range of 12 rebounds and a median of 12 total rebounds.

Fill in the tables with **possible numbers** of total rebounds based on the facts above.

Kaiserslautern Raiders Total Rebounds	
Hemmer	14
Fairchild	14
Rodriguez	14
Powdar	14
Standiford	14

Ramstein Royals Total Rebounds	
Bradley	2
Kretz	14
Hollenbeck	14
Brewster	13
Marks	14

There are multiple answers possible for Ramstein. Check with your teacher if you are unsure.

b. Explain what has to happen for a data set to have a standard deviation of 0.

To have a standard deviation of 0, the data set would have to have only one value. For example, {14, 14, 14, 14, 14} would have a standard deviation of 0.