

Show all relevant work!

1. Consider the data sets below.

- (i) 1, 2, 3, 4, 5, 6, 7 (ii) 1, 2, 3, 4, 5, 6, 70

(a) Find the median and mean for each.

(i) $\tilde{x} =$ _____ $\bar{x} =$ _____ (ii) $\tilde{x} =$ _____ $\bar{x} =$ _____

(b) What didn't change and what did change in part (a)?

(c) In each case determine the SD and the IQR. How are they affected by the outlier?

2. Make up a sample of five data points for each description given below.

(a) The mean and median are both 10.

(b) The median is 10 and the mean is greater than the median.

(c) The median is 10 and the mean is less than the median.

3. Morris has scored 65%, 73%, 82%, and 88% on his first four tests. How much does he need on his next test in order to have an average (mean) of 80% for all five?

4. Suppose Morris' scores in #3 had been 55%, 63%, 72%, and 78%. How much would he need on his next test in order to have an average (mean) of 80% for all five?

5. Using any of the digits (0, 1, 2, . . . , 9) with as many repetitions as you like, write an example of five data points with a mean of 7 and . . .

(a) The smallest SD possible.

(b) The largest SD possible.

6. Guess which of the following two lists has the larger standard deviation (SD).
(Check your guess with your calculator.)

(a) 9, 9, 10, 10, 10, 12

(b) 7, 8, 10, 11, 11, 13

7. (a) For each list below work out the mean, the Mean Absolute Deviations (MAD) from the mean and the SD.

(i) 1, 3, 4, 5, 7 \bar{x} = _____, MAD = _____, SD = _____

(ii) 6, 8, 9, 10, 12 \bar{x} = _____, MAD = _____, SD = _____

(b) How is list (ii) related to list (i)? How does this relationship carry over to the MAD and the SD?

8. Three instructors are comparing scores on their finals. Each had 99 students.

In class A, one student got 1 point, another got 99 points and the rest got 50 points.

In class B, 49 students got a score of 1 point, one student got a score of 50, and 49 students got a score of 99.

In class C, one student got a score of 1, one student got a score of 2, one student got a score of 3, and so on, all the way through 99.

(a) Which class had the biggest mean – or are they all the same?

(b) Which class had the biggest SD – or are they all the same?

(c) Which class had the biggest range – or are they all the same?

9. (a) The governor of California proposes to give all state employees a flat raise of \$70 a month.
What would this do to the average monthly salary of the state employees? The SD?

(b) What would a 5% increase in the salaries, across the board, do to the average monthly salary?
To the SD?