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Standard Deviation

Standard Deviation

$$\sigma = \sqrt{\frac{(\bar{x} - x_1)^2 + (\bar{x} - x_2)^2 + \ldots + (\bar{x} - x_n)^2}{n}}$$

1 **Compare the results of the two players.**

2 Calculate the standard deviation for Martin McTry.

3 Explain the elements in the standard deviation formula.

4 Calculate the standard deviation for the scoring.

5 Compare the standard deviation of each player with each other.

6 Determine the standard deviation for each set of scores.

+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

⚠ The complete package, **including all problems, hints, answers, and detailed answer explanations** is available for all sofatutor.com subscribers.

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Compare the results of the two players.

Choose the correct statements.

Cliff, a sports manager, wants to compare two players:

- Martin McTry has an average of 20 points in 5 games and a standard deviation of 2.757 .
- Lance Layton has an average of 20 points in 5 games and a standard deviation of 8.198 .

Decide what this information implies.

A

Both have the same mean.

B

The standard deviation shows that Lance Layton is more flexible.

C

Because Martin McTry's standard deviation is less than Lance Layton's, he is the worse player.

D

The lower standard deviation of Martin McTry's score shows that he is the more consistent player.

Hints for solving these problems

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Compare the results of the two players.

Hint #1

The bigger the standard deviation, the bigger the inconsistency.

Hint #2

Have a look at the following example:

Peter scores 40 points in one game, but doesn't score at all in the next three games. He has a mean of 10 points per game. Whereas Paul scores 10 points per game in four games.

Which player would you prefer?

Hint #3

If Peter and Paul played for the same team, they would score 50 points in one game and only 10 points in each of the following three games.

Answers and detailed answer explanations for these problems

1 of 6 Compare the results of the two players.

Answer key: A, D

You can calculate the mean and the standard deviation from the given data points.

Let's have a look at the example:
- Martin McTry's score has a mean of 20 and a standard deviation of approximately 2.757.
- Lance Layton's score shows also a mean of 20, but a standard deviation of 8.198.

Both have the same mean. So they've got the same number of average points. But the standard deviations are quite different from each other. The standard deviation of Lance is much bigger than Martin's.

This shows that Martin is more consistent at scoring points than Lance. His actual number of scored points differ much less from the mean than those of Lance.

If Cliff's decision of who to pick for the team is based on consistency, he should then prefer Martin McTry.

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