

A2.S.4: Dispersion 3: Calculate measures of dispersion (range, quartiles, interquartile range, standard deviation, variance) for both samples and populations

- 1 Tanner and Robbie discovered that the means of their grades for the first semester in Mrs. Merrell's mathematics class are identical. They also noticed that the standard deviation of Tanner's scores is 20.7, while the standard deviation of Robbie's scores is 2.7. Which statement must be true?
 - 1) In general, Robbie's grades are lower than Tanner's grades.
 - 2) Robbie's grades are more consistent than Tanner's grades.
 - 3) Robbie had more failing grades during the semester than Tanner had.
 - 4) The median for Robbie's grades is lower than the median for Tanner's grades.

- 2 On a nationwide examination, the Adams School had a mean score of 875 and a standard deviation of 12. The Boswell School had a mean score of 855 and a standard deviation of 20. In which school was there greater consistency in the scores? Explain how you arrived at your answer.

- 3 Jean's scores on five mathematics tests were 98, 97, 99, 98, and 96. Her scores on five English tests were 78, 84, 95, 72, and 79. Which statement is true about the standard deviations for the scores?
 - 1) The standard deviation for the English scores is greater than the standard deviation for the math scores.
 - 2) The standard deviation for the math scores is greater than the standard deviation for the English scores.
 - 3) The standard deviations for both sets of scores are equal.
 - 4) More information is needed to determine the relationship between the standard deviations.

- 4 What is the best approximation of the standard deviation of the measures $-4, -3, 0, 8, 9$?
 - 1) 1
 - 2) 2
 - 3) 5
 - 4) 10

- 5 Find the standard deviation for the following set of data:
 $\{7, 10, 14, 16, 18\}$

- 6 Find the standard deviation, to the *nearest hundredth*, for the following measurements:
24, 28, 29, 30, 30, 31, 32, 32, 32, 33, 35, 36

- 7 The scores on a mathematics test are:
42, 51, 58, 64, 70, 76, 76, 82,
84, 88, 88, 90, 94, 94, 94, 97
For this set of data, find the standard deviation to the *nearest tenth*.

- 8 During a 10-game season, a high school football team scored the following number of points:
14, 17, 21, 10, 35, 27, 13, 7, 45, 21
Find the standard deviation of these scores to the *nearest thousandth*.

- 9 For these measurements, find the standard deviation, to the *nearest hundredth*:
85, 88, 79, 79, 80, 92, 94, 78, 80, 85

- 10 During a recent time period, the following Apgar scores were recorded at St. Elizabeth's Hospital:
9, 8, 10, 9, 8, 10, 9, 10, 8, 10
Find the population standard deviation of the scores, to the *nearest hundredth*.

- 11 The ages of ten teachers at George Washington elementary school are:
33, 23, 36, 29, 36, 36, 33, 29, 36, 29
Determine the standard deviation of these ages to the *nearest tenth*.

- 12 Find the standard deviation, to the *nearest hundredth*, for the following test scores:
100, 99, 99, 97, 96, 96, 95, 94, 93, 91

- 13 The winning times of the women's 400-meter freestyle swimming at the Olympics are listed below. Times have been rounded to the nearest hundredth of a minute.

Year	Time
1960	4.66
1964	4.73
1968	4.51
1972	4.32
1976	4.17
1980	4.15
1984	4.12
1988	4.07

For the standard deviation of these times to the *nearest hundredth of a minute*.

- 14 The table below shows the age at inauguration of ten presidents of the United States.

President	Age at Inauguration
Harry Truman	60
Dwight D. Eisenhower	62
John F. Kennedy	43
Lyndon B. Johnson	55
Richard M. Nixon	56
Gerald R. Ford	61
Jimmy Carter	52
Ronald Reagan	69
George Bush	64
Bill Clinton	46

Find, to the *nearest tenth*, the standard deviation of the age at inauguration of these ten presidents.

- 15 The term "snowstorms of note" applies to all snowfalls over 6 inches. The snowfall amounts for snowstorms of note in Utica, New York, over a four-year period are as follows:

7.1, 9.2, 8.0, 6.1, 14.4, 8.5, 6.1, 6.8, 7.7,
21.5, 6.7, 9.0, 8.4, 7.0, 11.5, 14.1, 9.5, 8.6

What are the mean and population standard deviation for these data, to the nearest hundredth?

- 1) mean = 9.46; standard deviation = 3.74
- 2) mean = 9.46; standard deviation = 3.85
- 3) mean = 9.45; standard deviation = 3.74
- 4) mean = 9.45; standard deviation = 3.85

- 16 On a certain civil service examination, the grades of five people were:

71, 73, 74, 86, 96

Compute the arithmetic mean of their grades and the standard deviation to the *nearest tenth*.

A2.S.4: Dispersion 3: Calculate measures of dispersion (range, quartiles, interquartile range, standard deviation, variance) for both samples and populations

Answer Section

- 1 ANS: 2 PTS: 2 REF: 080802b
- 2 ANS:
The Adams School had the greater consistency in the scores. The school with the smaller standard deviation would have the more consistent scores.
- PTS: 2 REF: 060221b
- 3 ANS: 1 PTS: 2 REF: 010406b
- 4 ANS: 3 PTS: 2 REF: 019935siii
- 5 ANS:
4
- PTS: 6 REF: 088441siii
- 6 ANS:
3.06
- PTS: 4 REF: 069739siii
- 7 ANS:
16.2
- PTS: 4 REF: 060038siii
- 8 ANS:
11.198
- PTS: 4 REF: 089742siii
- 9 ANS:
5.48
- PTS: 4 REF: 069839siii
- 10 ANS:
0.83
- PTS: 2 REF: 061025b
- 11 ANS:
4.2
- PTS: 10 REF: 068040siii
- 12 ANS:
2.72
- PTS: 4 REF: 089642siii
- 13 ANS:
0.24
- PTS: 6 REF: 019437siii

14 ANS:
7.7

PTS: 4

REF: 080142siii

15 ANS: 1

PTS: 2

REF: 010707b

16 ANS:
80, 9.6

PTS: 10

REF: 068441siii