



Sample Standard Deviation at Work

Name _____

Use sample standard deviation when findings may be used to predict results related to other populations of data. Round to nearest tenth where needed.

1. a.) The chart below shows three sets of data. For each set, determine the mean, sample standard deviation (Sx), and population standard deviation, σ .

Set	Data Items	\bar{x} = Mean	Sx = Standard Deviation	σ = Standard Deviation
Set 1	{10, 11, 12, 13, 14, 15}			
Set 2	{1, 2, 16, 17, 75, 78}			
Set 3	{5, 5, 5, 5, 5, 5}			

- b.) Explain how it would possible to determine which of these three sets has the largest standard deviation without actually doing the calculations.

- c.) If the standard deviation of a set of data is equal to zero, what can be said about the data within the set?

2. Your assignment is to determine the average age of bridges across the United States based upon the information shown in the chart at the right.



US State	Average Bridge Age
Arkansas	43 years
California	51 years
Georgia	43 years
Kansas	52 years
New York	44 years
Pennsylvania	53 years
Texas	49 years

- a.) Find the mean of the chart data.
- b.) Will the “sample” standard deviation or the “population” standard deviation be needed for this problem?
- c.) Find the standard deviation of the chart data.
- d.) Make a statement about the mean and standard deviation associated with the bridges across the United States based upon your findings.

Note: The National Bridge Inventory, lists the average age of existing bridges in the US is 42 years.

3. The ages of 10 teachers at Kingston High School are: 34, 25, 43, 37, 29, 52, 40, 34, 46, 32.

- a.) Find the mean and standard deviation for this set of ages. Mean = _____ SD = _____

- b.) If there are 28 teachers at Kingston High School, what can be said about the mean and standard deviation associated with all of the teachers based upon the information given?

4. Your score, and the scores of 5 of your friends, on the last Math Test are 92, 84, 91, 88, 93, and 95.
- Find the mean of this data.
 - Find the standard deviation.
 - Predict the mean score and the standard deviation of the entire class based upon the given data.

- d.) There are 30 students in your math class. Their scores on the last Math Test are shown below:
 {92, 54, 91, 88, 93, 95, 71, 82, 75, 88, 68, 76, 87, 83, 65,
 90, 55, 72, 86, 71, 72, 66, 80, 73, 77, 91, 60, 79, 53, 79}

- Determine the mean of this data set:
- Determine the standard deviation of this data set:

- e.) Describe how your prediction was related to the actual class population. Include what conditions may have led to a “good” prediction or a “poor” prediction.

5. Given the data set {34, 36, 54, 48, 44, 50, 35, 47}.

How many values in the data set are within one sample standard deviation of the mean?

6. Chuck and Fred play golf once a week. Their scores for the first 10 weeks are shown.

Chuck	80	76	79	72	82	87	72	80	78	74									
Fred	70	75	81	75	72	80	82	79	70	68									

- a.) Find the mean. Chuck: _____ b.) Find the sample standard deviation. Chuck: _____
 Fred: _____ Fred: _____

- c.) Predict how both players will play over the 20 week span.

Chuck and Fred’s scores for the 20 week span are shown.

Chuck	80	76	79	72	82	87	72	80	78	74	70	75	78	72	78	82	75	81	71	72
Fred	70	75	81	75	72	80	82	79	70	68	71	75	72	68	69	75	68	71	70	70

- d.) Find the mean. Chuck: _____ e.) Find the population standard deviation. Chuck: _____
 Fred: _____ Fred: _____

- f.) How well did the prediction match the actual 20 week span? Include factors that may have influenced the data.