

Name _____

Period _____

Date _____

Lesson 2 - Standard Deviation

What you will learn.... how to interpret and find the standard deviation of a data set.

Standard deviation, another measure of spread, represents the average of the distances between individual data values and the mean.

The formula for finding the standard deviation of the data set x_1, x_2, \dots, x_n is:

$$\text{standard deviation} = \sqrt{\frac{(x_1 - \bar{x}) + (x_2 - \bar{x}) + \dots + (x_n - \bar{x})}{n}}$$

where \bar{x} is the mean of the set of data, and n is the number of data values.

1) Calculate the standard deviation for the temperatures: $77^\circ, 86^\circ, 84^\circ, 93^\circ, 90^\circ$.

Step 1: Find the mean: → Average **86**

Step 2: Complete the table below.

Data value, x	Deviation from the mean, $x - \bar{x}$	Squared deviation, $(x - \bar{x})^2$
77°	$77 - 86 = -9$	$(-9)^2 = 81$
86°	$86 - 86 = 0$	$(0)^2 = 0$
84°	$84 - 86 = -2$	$(-2)^2 = 4$
93°	$93 - 86 = 7$	$(7)^2 = 49$
90°	$90 - 86 = 4$	$(4)^2 = 16$

Step 3: Find the mean of the squared deviations:

$$\boxed{30} = \frac{81 + 0 + 4 + 49 + 16}{5}$$

Step 4: Take the square root of the mean of the squared deviations. Round your answer to the nearest TENTH.

$$\sqrt{30} = 5.5$$

The standard deviation is approximately 5.5.

2) The table below lists the average ages of players on 15 teams randomly selected from the 2010 teams in the National Football League (NFL).

NFL Players' Average Ages, by Team
25.8, 26.0, 26.3, 25.7, 25.1, 25.2, 26.1, 26.4, 25.9, 26.6, 26.3, 26.2, 26.8, 25.6, 25.7

Calculate the mean, median, interquartile range, and standard deviation for the data set using your graphing calculator.

ROUND YOUR ANSWERS TO THE NEAREST HUNDREDTH WHEN NECESSARY.

Use these steps to enter the data into your calculator.

Step 1 :

Press STAT 1 for STAT Edit
Enter the data into one of the lists

Step 2:

Press STAT
Press right arrow key to highlight CALC
Press ENTER for 1-Var Stats
Enter the name of the list containing your data
Press 2nd 1 for L1
Press ENTER
On TI-84 screen
 \bar{x} = ... (Sample mean)
.
.
 σx = ... (Sample standard deviation)

ANSWERS:

mean 25.98 median 26 interquartile range .6 standard deviation .46

3) The table below lists the average ages of players on 15 teams randomly selected from the 2010 teams in Major League Baseball (MLB).

MLB Players' Average Ages, by Team
28.5, 29.0, 28.0, 27.8, 29.5, 29.1, 26.9, 28.9, 28.6, 28.7, 26.9, 30.5, 28.7, 28.9, 29.3

Find the: mean 28.62 median 28.7 interquartile range 1.1 standard deviation .91

4) Compare the corresponding statistics for the NFL data and the MLB data. Make a conjecture which involves your statistics.

MLB → greater standard deviation and mean