

Math 9 More Statistics!

Name: _____

While the mean tells us what the average of the data is, the standard deviation tells us how spread out the numbers are, and more importantly, tells us what data is "close to" the average.

Calculate the standard deviation by following these 6 steps.

1. Calculate the mean
2. Subtract the mean from every data point.
3. Square each of those difference.
4. Add up all the differences.
5. Divide by the number of data points. This is the variance.
6. Square root the variance.

$$82.7 + 8.1 = 90.8$$

$$82.7 - 8.1 = 74.6$$

If a Math score is in that range, it is "normal".

Back to Example 1: Test scores in a Math class were as follows: 78, 67, 85, 81, 90, 74, 95, 85, 80, 92.

Data	Subtract mean: 82.7	Square	Average the squares	Square root
78	$82.7 - 78 = 4.7$	22.09	$\frac{656.1}{10}$ $= 65.61$	$\sqrt{65.61}$ $= 8.1$ is the standard deviation
67	$82.7 - 67 = 15.7$	246.49		
85	-2.3	5.29		
81	1.7	2.89		
90	-7.3	53.29		
74	8.7	75.69		
95	-12.3	151.29		
85	-2.3	5.29		
80	2.7	7.29		
92	-9.3	86.49		

On the back, you will practice this. Here, make your own data set that has a mean of 10, median of 8, and a mode of 12. You decide how many numbers are in the set!

Now you do! Calculate the mean, median, mode and standard deviation of the following data set.

Name	Annual Income
Raffy	\$33,000
Jessie	\$38,000
Corin	\$39,000
Paul	\$42,000
Kat	\$46,000
Luigi	\$49,000
Carl	\$52,000
Susan	\$60,000
Miguel	\$68,000
John	\$79,000

Who is within the normal range (one standard deviation from the mean?).

For fun, let's say that ~~John~~ ^{John} leaves and Bill Gates joins. He earns at least \$1 billion in a year (more, but just being conservative). What happens to the mean and the median? Which value gives a better indication of the "average" of the data?