

I. Find the range, variance, and standard deviation of each set of data to the nearest tenth.

Given Set of Data	Range	Variance	Std. Dev.
1.) {32, 41, 35, 35, 46, 42}	14	23.6	4.9
2.) {13, 62, 77, 24, 38, 19, 88}	75	763.8	27.6
3.) {89, 99, 42, 16, 42, 71, 16}	83	959.1	30.97
4.) {450, 400, 625, 225, 300, 750, 650, 625, 300, 450}	525	28171.3	167.9
5.) {17, 23, 65, 94, 33, 33, 33, 8, 57, 75, 44, 12, 11, 68, 39}	86	630.7	25.1
6.) {7.2, 3.1, 3.8, 9.5, 8.3, 8.4, 11.2, 7.2}	8.1	6.5	2.6
7.) {1.5, 2.5, 3.5, 4.5, 4.5, 5.5, 6.5, 7.5}	6	3.5	1.9
8.) {48, 36, 40, 29, 45, 51, 38, 47, 39, 37}	22	40	6.3

II. Complete each problem below. You may find the mean, variance, and standard deviation using the calculator steps on your notes. *(see other sheet for answers)*

- 9.) Data set "A" has five elements: $A = \{82, 87, 92, 94, 80\}$. Create a data set "B" such that each element of set B is 1 less than those in set A. Now, create a data set "C" such that each element of set C is 2 more than set A.

What is the mean, median, range, variance, and standard deviation of sets A, B, and C?

Explain your observations about these values. *see other sheet*

- 10.) The height of a group of students is 66 inches with a standard deviation of 4 inches. If the heights had been measured in centimeters instead, what would be the mean and standard deviation?
(Hint: 1 inch = 2.54 centimeters.) *see other sheet*
- 11.) The physics class took two tests. On the first test, the mean score was 72 with a standard deviation of 5. On the second test, the mean score was 80 with a standard deviation of 6. Cindy made an 82 on the first test and an 87 on the second. On which test did she do better relative to the rest of the class?
see other sheet
- 12.) A teacher gave a test: {80, 82, 85, 95, 87, 63, 68, 93, 92, 90, 88, 82, 70, 64, 75}
- What percent of the scores fell within one standard deviation from the mean?
 - What percent of the scores fell within two standard deviations from the mean?
 - What percent of the scores fell within three standard deviations from the mean?
 - The teacher wanted to add a flat curve to all the test scores by adding 3 points, would the mean or standard deviation change?
see other sheet.

Adv Functions: 3.2 WS - Measures of variation

7) Set A: {82, 87, 92, 94, 80}

mean = 87 median = 87 range = 14 variance = 29.6 std dev = 5.4

Set B: {81, 86, 91, 93, 79}

mean = 86 median = 86 range = 14 variance = 29.6 std dev = 5.4

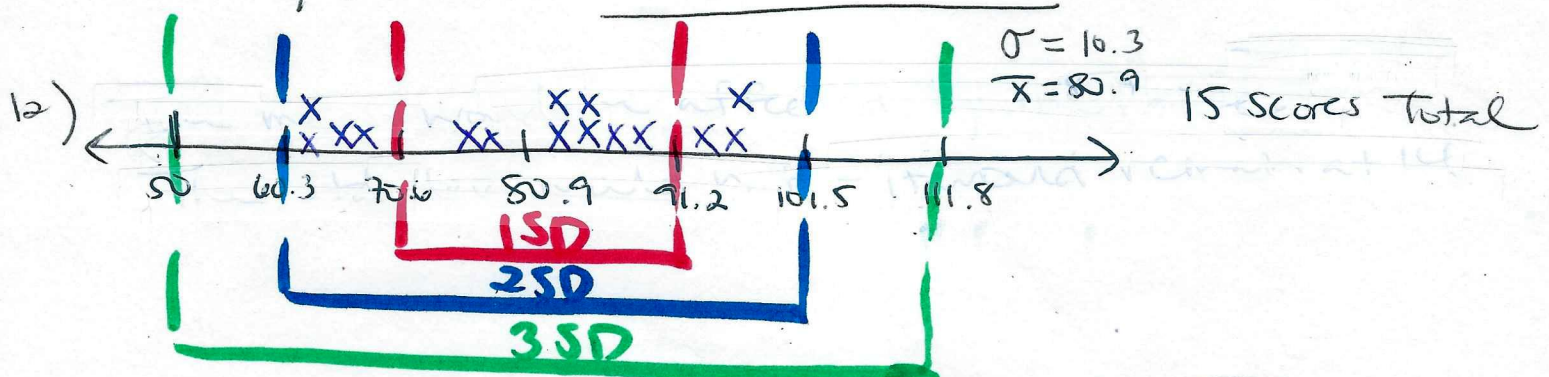
Set C: {84, 89, 94, 96, 82}

mean = 89 median = 89 range = 14 variance = 29.6 std dev = 5.4

Observations \rightarrow adding or subtracting values to a set of data doesn't alter range, variance, or std dev. — the spread doesn't change. But the mean and median will move according to the value added or subtracted.

10) The height would be $66 \times 2.54 = 167.64$
The std dev would be $4 \times 2.54 = 10.16$

11) On 1st test, Cindy was 2 std dev above class avg.
On 2nd test, Cindy was 1 std dev above class avg.
Cindy performed better on 1st test to the class's scores.



a) $\frac{8}{15} = \boxed{53.3\%}$ b) $\frac{15}{15} = \boxed{100\%}$ c) $\frac{0}{15} = \boxed{0\%}$

d) Once 3pts added $\rightarrow \bar{x} = 83.9$ (\bar{x} was 80.9)
 $\sigma \approx 10.3$ (σ stays ≈ 10.3)
so mean changed but SD didn't change