

NOTES: STANDARD DEVIATION

DAY 5

Textbook Chapter 11.1, 11.3

OBJECTIVE: Today you will learn about standard deviation and the normal curve!

There are three ways that we can measure how spread out the data in a data set is.

- 1.
- 2.
- 3.

Who did the best? 5 problem sets were assigned this quarter.

Joe received the following scores: 12, 18, 18, 19, 18.

Another student, Charlotte, received these scores: 20, 19, 19, 20, 7.

Who did better on their problem sets? How can we tell?

Let's find the standard deviation of the Problem Set scores to tell us who was the most **CONSISTENT**.

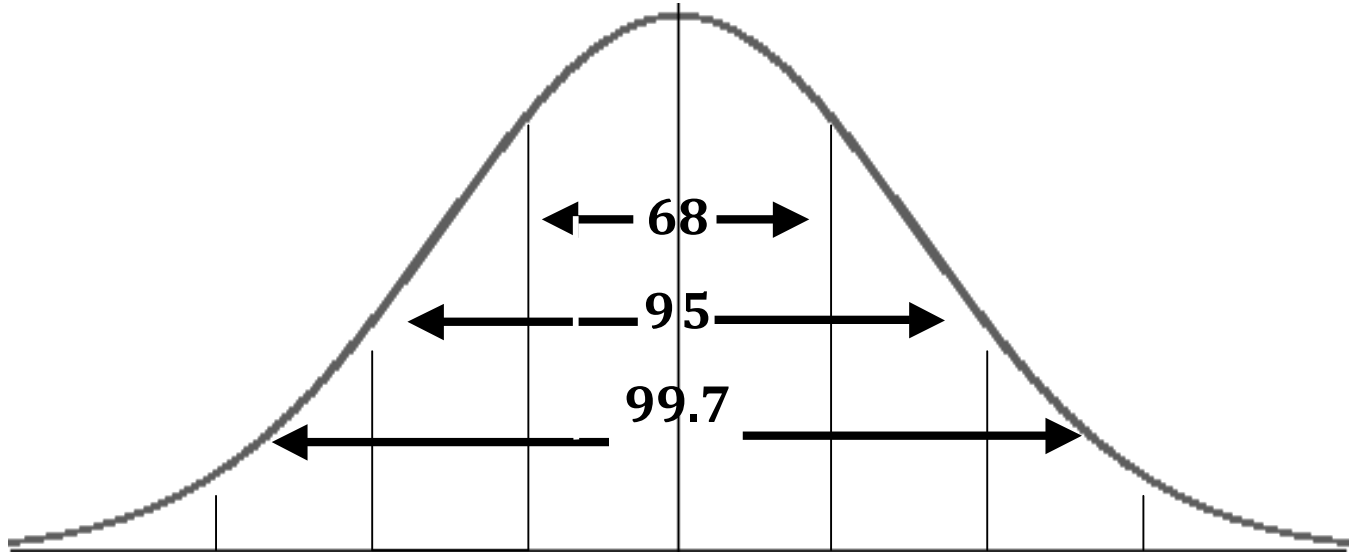
Without doing the calculation, determine which of the following two sets of data have the smaller standard deviation. Explain.

Data set #1:	8	10	11	14	17	19	23
Data set #2:	32	31	33	33	35	37	38

Now with a calculator, calculate the standard deviation for both. Did you make the correct decision above?

Properties of the Normal Curve:

- The mean, median and mode are all equivalent
- Area under the curve (total probability) is 1, or 100%
- Curve is symmetrical



EMPIRICAL RULE

Monthly food expenditures for 750 families of four in a large city average \$420 with a standard deviation of \$80. Assuming that the monthly food expenditures are normally distributed:

- a. What percentage is between \$260 and \$340?
- b. How many of these expenditures is between \$260 and \$340?
- c. How many are less than \$260 or greater than \$580?
- d. If a family spends \$525 on food each month, determine the percentile for their monthly food expenditures.
- e. How much must a family spend in order to be in the top 30% of monthly food expenditures.

Practice Using your Calculator

1. The 1998 average monthly temperatures for a town are given below:

33 35 40 42 47 52 54 57 64 66 67 72

- Find the mean
- Find the standard deviation

2. Students in Mr. Johnson's class took a test on statistics. The test scores are as follows:

97, 88, 91, 60, 86, 72, 88, 76, 66, 60, 50, 61, 88, 73, 72, and 97

- Find the mean
- Find the standard deviation
- Make a box and whisker plot