

2 EXAMPLE

Baseball The table at the right shows the batting averages of the American League Batting Champions. Use a graphing calculator to find the mean and the standard deviation to the nearest thousandth.

.356	.358	.347	.339	.357
.372	.350	.349	.326	.372

Step 1 Press **STAT** **ENTER** and then enter the data as **L1**.

Step 2 Press **STAT** and then select **CALC** and **1; 1-Var Stats**.

Step 3 Press **ENTER**. The calculator will display several values, including the mean and the standard deviation.

```
1-Var Stats
x̄=.3526
Σx=3.526
Σx²=1.245024
Sx=.0139698087
σx=.0132529242
↓n=10
```

← mean

← standard deviation

- The mean batting average is about .353, and the standard deviation is about 0.013.

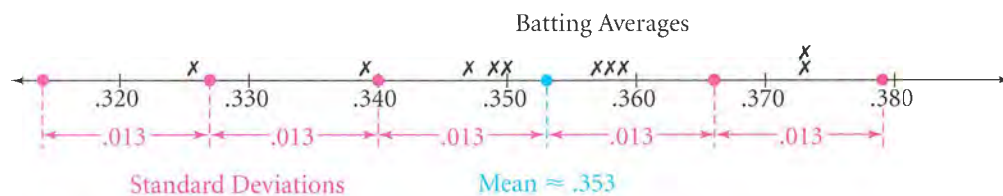
In a data list, every value falls within some number of standard deviations of the mean. When a value falls within one standard deviation of the mean, it is in the range of values from one standard deviation below the mean to one standard deviation above.

3 EXAMPLE

Use the data from Example 2. Within how many standard deviations of the mean do all of the values fall?

Step 1 Draw a number line. Plot the data values and the mean.

Step 2 Mark off intervals of 0.013 on either side of the mean.



- All of the values fall within three standard deviations of the mean.

EXERCISES

For each data set, find the mean, the standard deviation, and the number of standard deviations that includes all the data values.

1. 4, 8, 5, 12, 3, 9, 5, 2

2. 102, 98, 103, 86, 101, 110

3. Explain why the value .326 in Example 3 can be described as an outlier.

4. **Critical Thinking** Suppose two sets of data have the same mean and range but different standard deviations. What does this indicate about how the data in each set are distributed?

5. a. **Data Collection** Gather numerical data on a topic of your choosing.

b. Find the mean and the standard deviation.

c. Make a line plot of the data showing the mean, the data, and the standard deviations. How many standard deviations are needed to include all the data?