

## Lesson 9-7

## Example 1

**SPORTS** During a bowling tournament, the 4 bowlers for the High Rollers made the following number of strikes: Davis, 10; Stone, 8; Thompson, 6; and Jones, 12. Find the variance for the set of numbers.

## Solution

- |   | number | $x - m$  | $(x - m)^2$  |
|---|--------|----------|--------------|
| 1. Divide the sum of scores by 4 to find the mean, $m$ .<br>( $m = 9$ ) | 10     | $10 - 9$ | $(1)^2 = 1$  |
|   | 8      | $8 - 9$  | $(-1)^2 = 1$ |
|   | 6      | $6 - 9$  | $(-3)^2 = 9$ |
|   | 12     | $12 - 9$ | $(3)^2 = 9$  |
2. Find the difference between each number and the mean. Then find the square of each difference.
3. Find the mean of all the squares in Step 2.
- $1 + 1 + 9 + 9 = 20 \quad 20 \div 4 = 5$
- The variance is 5.

## Example 2

Find the standard deviation for the set of numbers in Example 1.

## Solution

Find the square root of the variance.

$$\sqrt{5} \approx 2.2 \quad \text{The standard deviation is 2.2}$$

**Example 3**

Henry took two tests. On which did he score better, compared with others in his class?

	<b>Test A</b>	<b>Test B</b>
Henry's score	86	92
Mean score	71	77
Standard deviation	8	10

**Solution**

1. Compare both of his test scores with the mean. He scored 15 points higher than the mean on both tests.
2. Use the standard deviation.

In Test A, Henry's score was  $\frac{15}{8}$ , or 1.9 standard deviations above the mean score.

In Test B, it was  $\frac{15}{10}$ , or 1.5 standard deviations above the mean score.

Relative to her classmates, Henry scored better on Test A.