

Memory Project: Collecting and Presenting Data

Level 4: Basic Graph

Level 5: Standard Deviation Graph (must show all math calculations)

The standard deviation is kind of the "mean of the mean," and often can help you find the story behind the data. A normal distribution of data means that most of the examples in a set of data are close to the "average," while relatively few examples tend to one extreme or the other. Standard deviation helps determine the degree of error in your measurements.

How to Calculate Standard Deviation

Calculate the mean (add your 3 scores and divide by 3)

Example

$$6 + 12 + 9 = 27, 27/3 = 9$$

Subtract each number from the mean

$$6 - 9 = -3$$

$$12 - 9 = 3$$

$$9 - 9 = 0$$

Square the difference of each number

$$-3^2 \quad -3 \times -3 = 9$$

$$3^2 \quad 3 \times 3 = 9$$

$$0^2 \quad 0 \times 0 = 0$$

Add the squares together for a sum

$$9 + 9 + 0 = 18$$

Reduce the number of trials by 1

$$3 - 1 = 2$$

Divide the reduced trial number by the sum of the squares

$$18 / 2 = 9$$

Find the square root of this number

square root of

$$9 \sqrt{\quad} \quad 3$$

(The result is +3 and -3.) The graph the below shows the bar and whiskers at 3 points above the average of 9 (12) and at 3 points below then average of 9 (6). The shorter the bar and whiskers, and the closer it is to the mean, the lower the degree of error.

