

Sample Structure Writing Assignment (Standard Deviation)

Definition: The standard deviation tells us something about how spread out a group of numbers are relative to the middle of the numbers.

Long example/personal experience: It is one week after Halloween trick-or-treating and you want your favorite ice-cream. Your parent is worried, however, that you have eaten too much candy this week. They count the remaining candy in your pumpkin bucket and say: "You have eaten 28 pieces of candy this week – that is only 4 pieces of candy per day! Very good, let us go and get you some ice-cream."

But did you actually eat only 4 pieces of candy each day this past week? Oh, no ☺. Now is a good time to talk about standard deviation.

The standard deviation of the number of pieces of candy eaten per day tells us something about how consistent we were in our daily candy eating.

A large standard deviation would mean that you had 22 pieces of candy the day after Halloween, then you got worried that your parent would notice and get upset (and may be your stomach was hurting) and so you then had only 1 piece of candy each day for the rest of the week. You see how the numbers 1, 1, 1, 1, 1, 1, are far from the number 22? That large spread in the numbers makes for a large standard deviation.

A small standard deviation would mean that you decided to have about the same number of pieces of candy every day, for example having 7 the day after Halloween, then 2 the day after that, then 3, then 5, then 4, then 6, then 1. You see how numbers 1,2,3,4,5,6,7 are close together? That small spread in the numbers makes for a small standard deviation.

Compare/Contrast: So, is standard deviation simply the distance between the smallest and the largest number? Oh, no. What grown-ups measure with the standard deviation is the difference between how many pieces of candy you ate each day and the number of pieces of candy you ate on average each day. And the standard deviation would be very small, 0, if you really ate 4 pieces of candy every day.

Short Example/Application: One application of the standard deviation would be in planning for a birthday party. Let us pretend that we always have 20 people (cousins, friends, and relatives) at our birthday party, but not all might eat a piece of cake. Should we have a cake that serves 20 people or will a smaller cake work? If the standard deviation of pieces of cake eaten is large, then it would be hard to determine how many will eat cake at the next party, so we better have a cake that serves 20 people. If the standard deviation of pieces of cake eaten is small, then we can prepare a cake that will serve close to the average number of pieces of cake eaten, say 12, and be reasonably certain that we will have enough cake.