Standard deviation and Variance are both measures to understand how spread out the data. Mean is just the average of the dataset we have, but to see how much the data points deviates, we go to calculate SD and variance. Standard deviation is square root of variance and it would be much useful when we are comparing it with the dataset and mean, because variance even though useful in many things will not compare well with mean and data set because it is in square unit that of data. Standard deviation tells us how well the mean represent the data, because 2 different dataset can have similar mean but difference in datapoints might be huge. For eg, if the mean income of 10 households is 80,000 may seem every family is doing well, but one of the house can make a million and others might make less than 40,000 and in that case they will have a high SD, indicating mean does not represent the dataset well.

The formula for the variance is sum of square of the differences of all the datapoints from the mean divided by n. To get this first find the mean and then minus mean from each data point and square each difference and then sum them all up and divide by the number of datapoints. The formula for standard deviation is just square root of the variance. As mentioned above, squaring everything makes variance in squared units, so taking the square root brings standard deviation back to the same unit as the data.

(In formula for variance We use n to divide when we have the entire population,but if we are working with a sample we use n-1 to divide to correct for bias).