Calculating the **Mean** or **Average**

For any given data:

**X** = {x1, x2, x3, x4, x5, x6, x7, x8,… xn}

The sample average is denoted by x-bar, $\overbar{x}$

 $\overbar{x}= \frac{x\_{1}+x\_{2}+x\_{3}+x\_{4}+…+x\_{n}}{n}$

Notes:

* Mean is a measure of central tendency, it approximates the center of the distribution
* Mean is only used with non-categorical data.
* The mean is *sensitive*. Extreme values in the data set have a strong impact on its value.
* In symmetric distributions, the mean and median are approximately equal
* In highly skewed distributions, $\overbar{x}$, should be avoided. Use Median Instead
* The sample mean $\overbar{x}$ will always exist, even if the population mean, µ, may not.
* The average is specific expression of the *Expectation*. This can be interpreted as representing the value one might expect to obtain. Beware that this is nonsense in certain situations, such as when the distribution is flat (uniform) or heavy tailed.

Example:

 **X** = {5, 7, 1, 6, 2, 2, 4, 7, 8}

n = 9

$\overbar{x}= \frac{5+7+1+6+6+2+2+4+7+8}{9}$ = 5.3$\overbar{3}$