From where	Range	Interquartile range	Variance	Stander Deviation	Coefficient of variance
Calculation	**- the distance from the smallest to the largest It Obtained by - subtracting lowest value from the highest value in a set of data .**	**طريقة الحساب موجودة على السلايدات**	**- V= S^2** **نفس SD لكن من غير الجذر خطوات**	**- measure the variation of one observation from the other** $-\ s^2 \ = \frac{\sum(x-\overline{x})}{n-1}$ $-S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}$	$-\ C.V = \frac{S.D}{\overline{X}} \times 100$ **- It is representing by measuring the variation in relation to the percentage of mean of that data**
Characteristics Advantages and Disadvantages	**1- simplest** **2- most obvious one of dispersion.** **3- The range is not affected by skewness, but** **Disadvantage:** **1- sensitive to the addition or removal of an outlier value** **2- it is based on only two observations (the lowest and highest value)** **3- give no idea about others** **4- not take into consideration other values in data** **5- It is not very useful measures of variation,** **✓ because it does not use other observation**	**1- not affected by outlier** **2- the spread of the middle 50%of the distribution together with the median is useful adjunct (accessory) to the range** **3- it is less sensitive to the size of the sample providing that this is not too small** **4- The interquartile range is not affected either by Outlier, skewness** **Disadvantage:** **1- it does not use all of the information in the data set since it ignores the bottom and top quarter of values.**	**Disadvantage:** **1- squared Kg2 , bacteria2 ….., So restore the squared unit into its original form by taking the square root of this (S2) value, this is known as S.D.**	**1- An alternative approach use the idea of summarizing spread by measuring** **2- The smaller the mean distance is the narrower the spread of values must be and visa versa** **3- it uses all the information in the data** **Disadvantage:** **- It is depend on the unit of measurement, we can't compare between two or more data to overcome this Coefficient of Variation C.V**	**-C.V is used** **- to compare between two or more data** **➢ with different units of measurement .** **➢ data with large difference between their means .**

Used for					