

*Biostatistics*

PRACTICAL

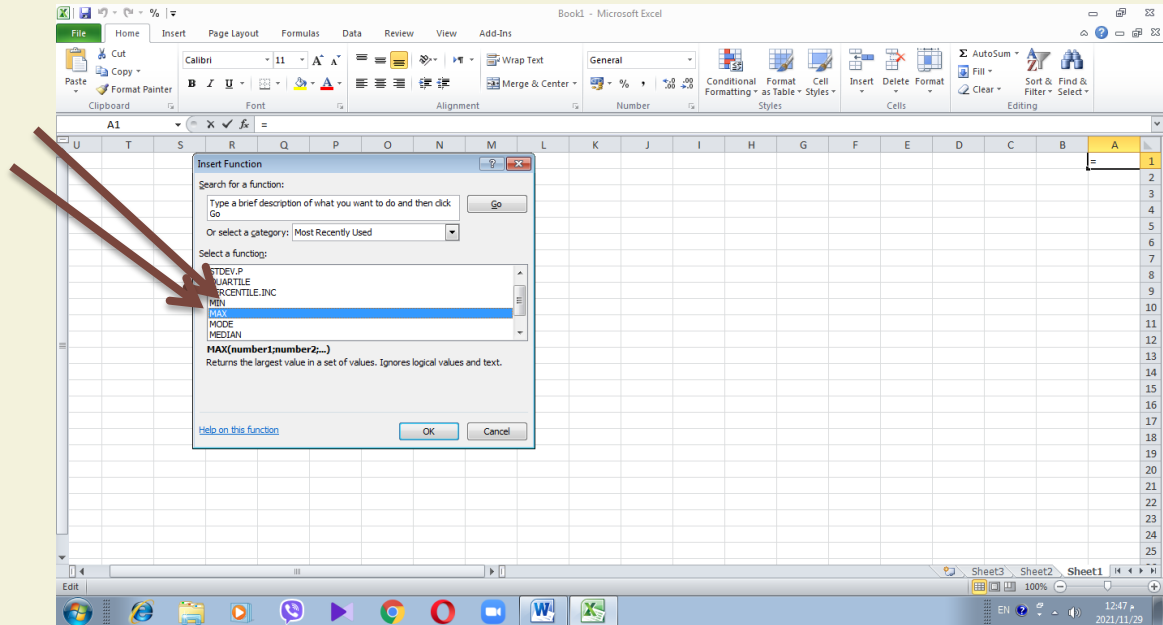
Prepared by

Baneen Ahmed

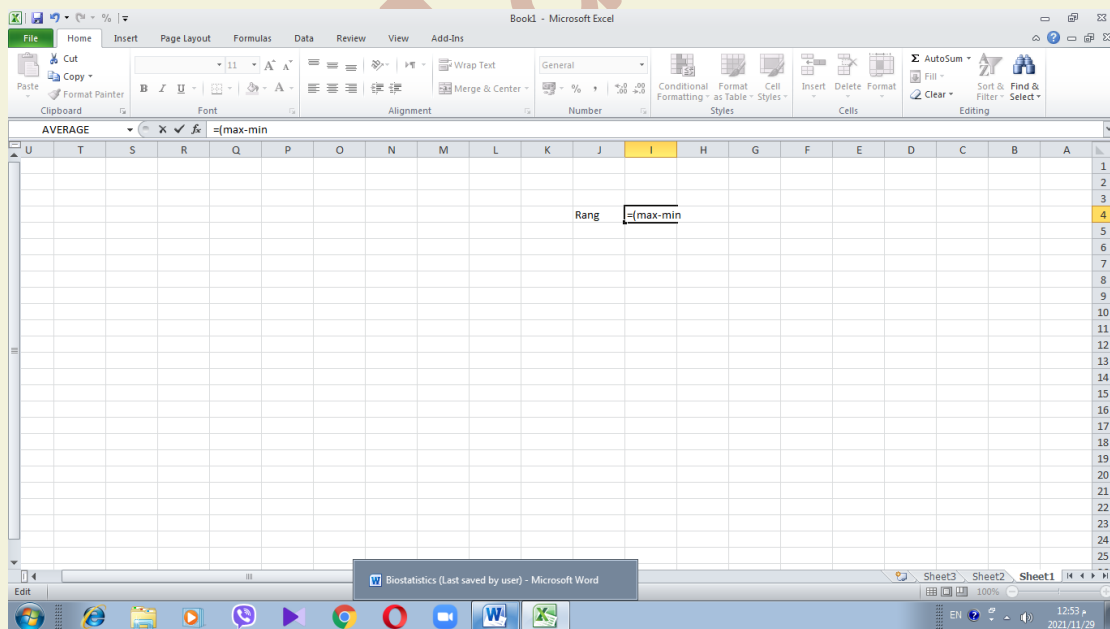
## 2- Measures of dispersion (variation):

### a- Rang:

**Step1: compute Max and Min: fx, min or max ,ok.**

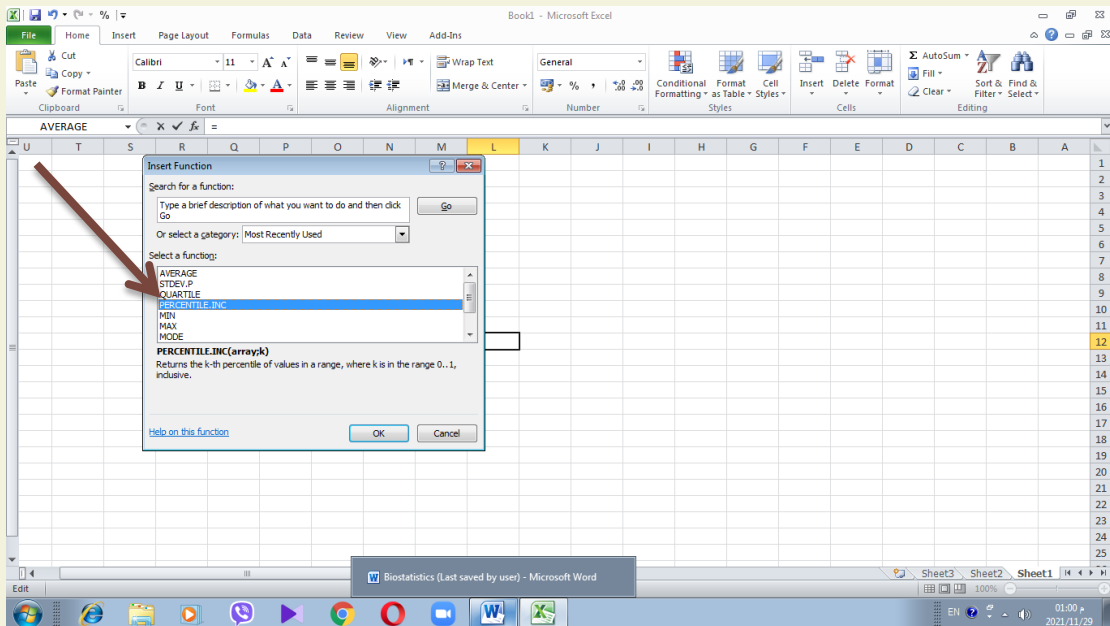


**Step2: compute the rang : (max-min),inter.**

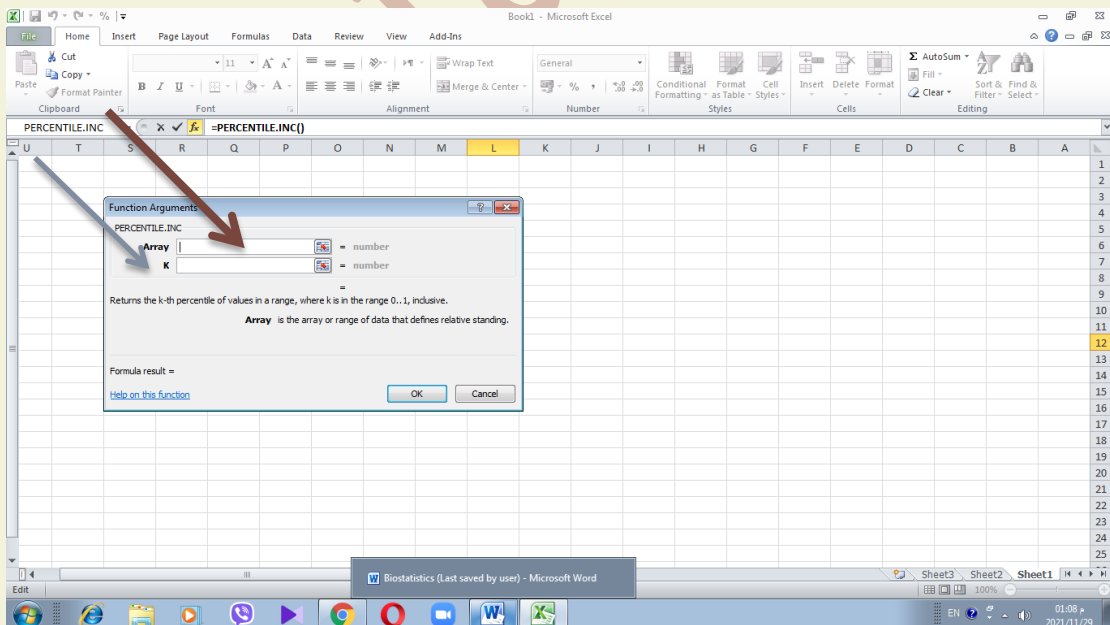


## b- Percentile:

Step1: fx, percentile INC, ok.



Step2: put the data in the cell and put the percentile in (K):



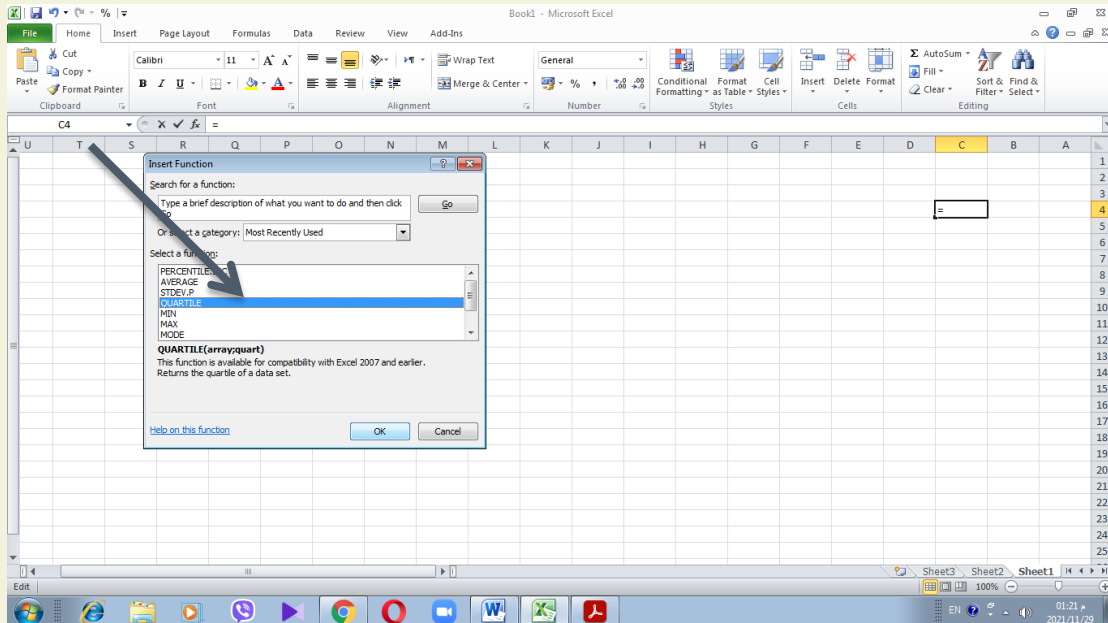
Hint: (k) value =  $\frac{\text{percentile}}{100}$

For example: percentile=90<sup>th</sup>, then  $k = \frac{90}{100} = 0.9$

## c- Inter quartile rang (IQR):

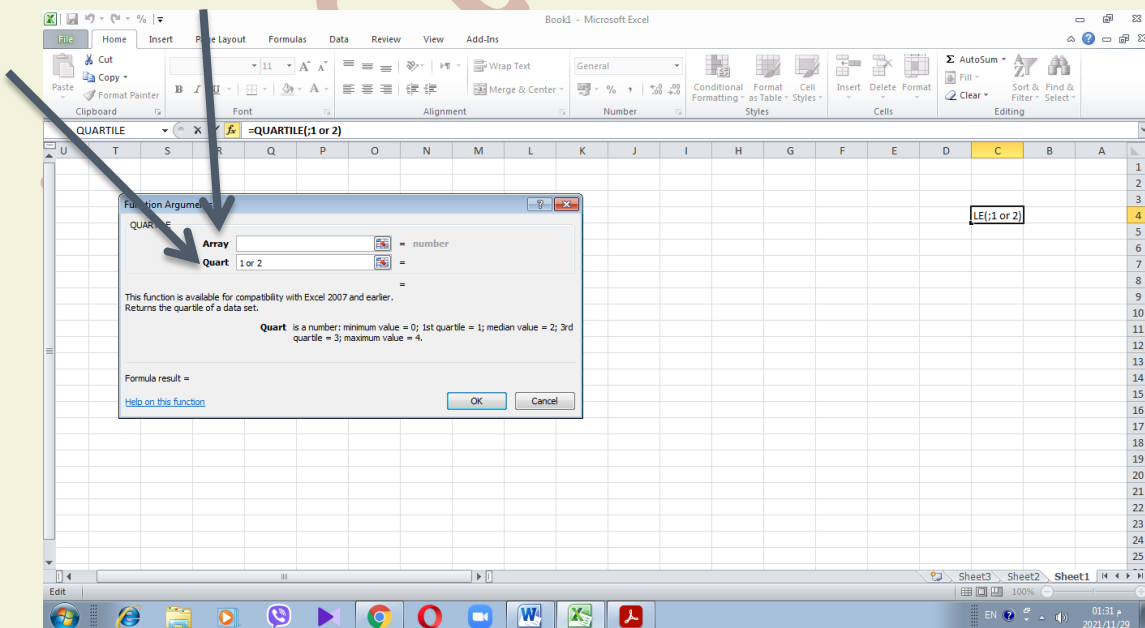
**Step1: find first quartile and third quartile :**

**Fx, quartile, ok.**

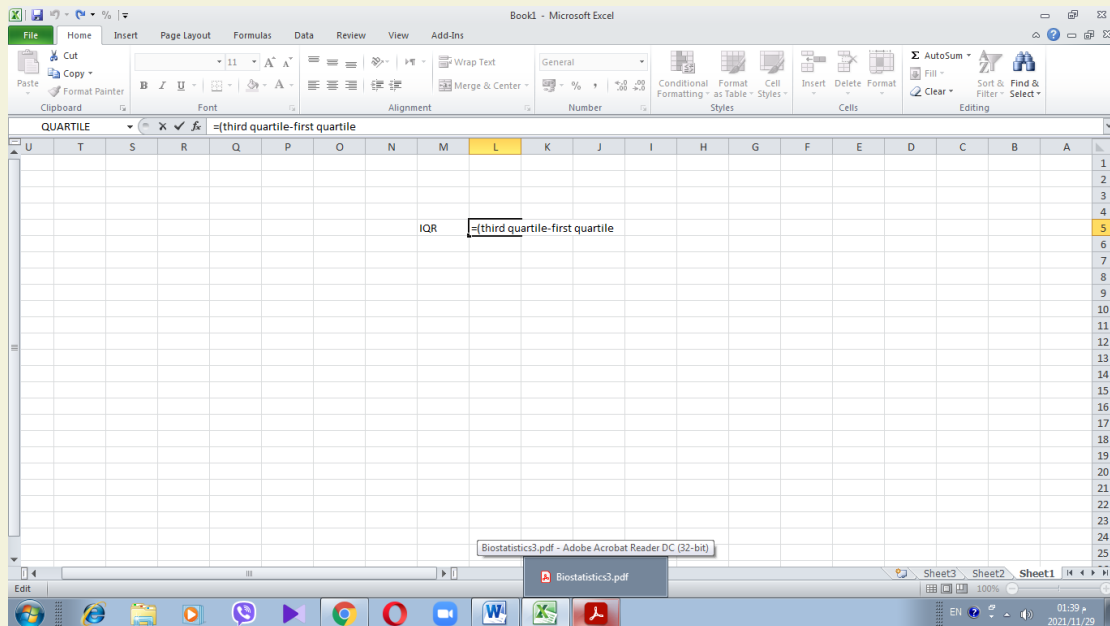


**Step2: put the data in the cell (array) and the quartile**

**in the (quart) ,ok.**



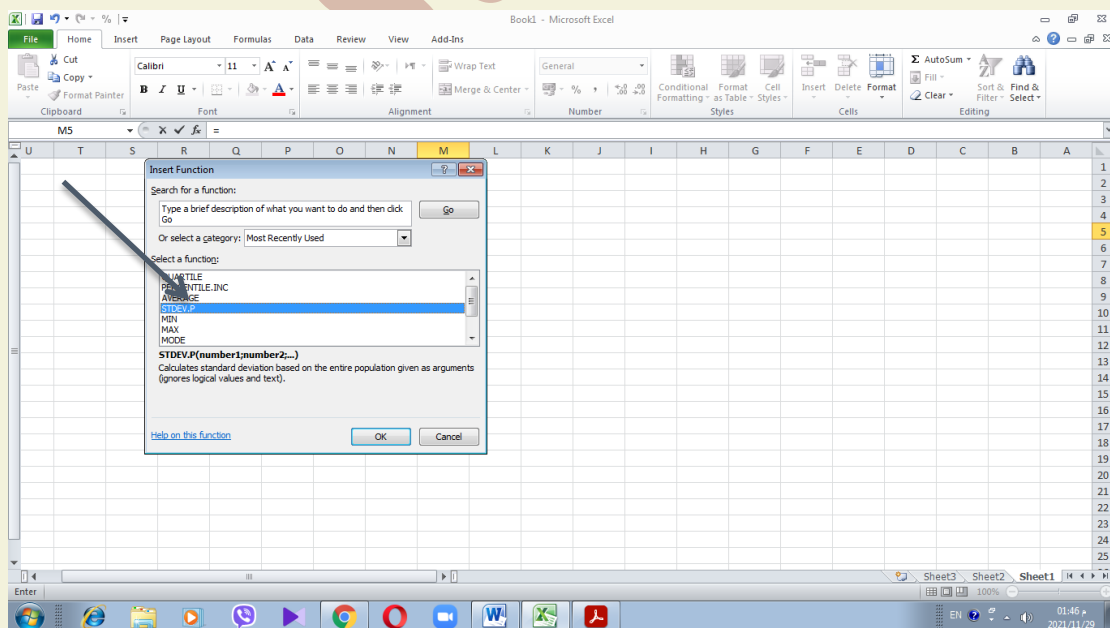
**Step3:compute the (IQR)= third quartile-first quartile:**



**d- Standard deviation :**

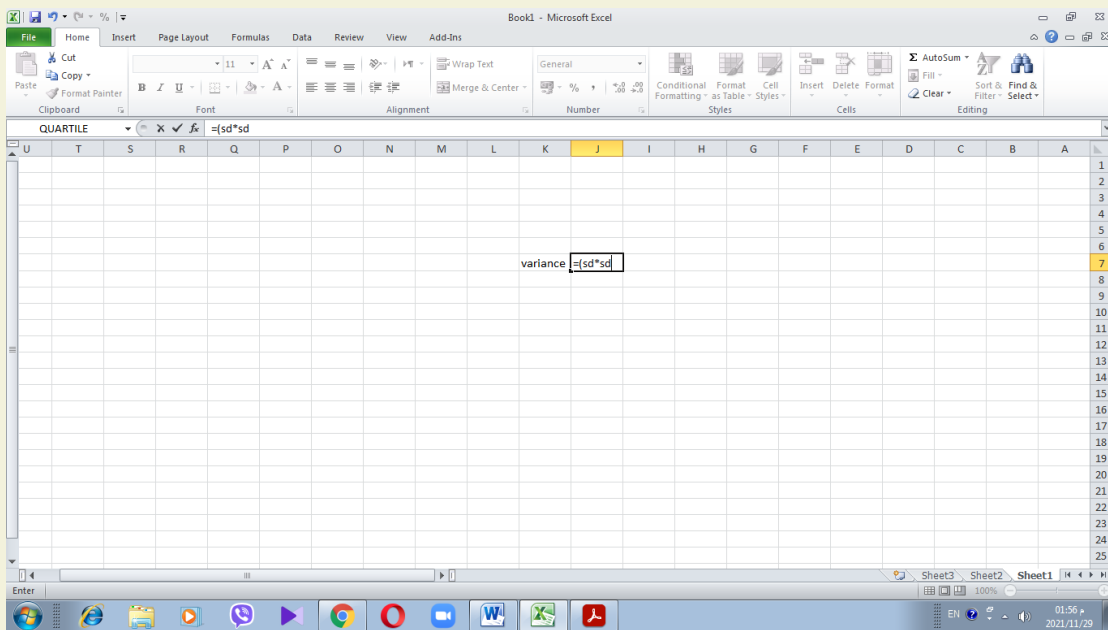
**fx, (STDEV.S) if sample and (STDEV.P) if population**

**,ok.**



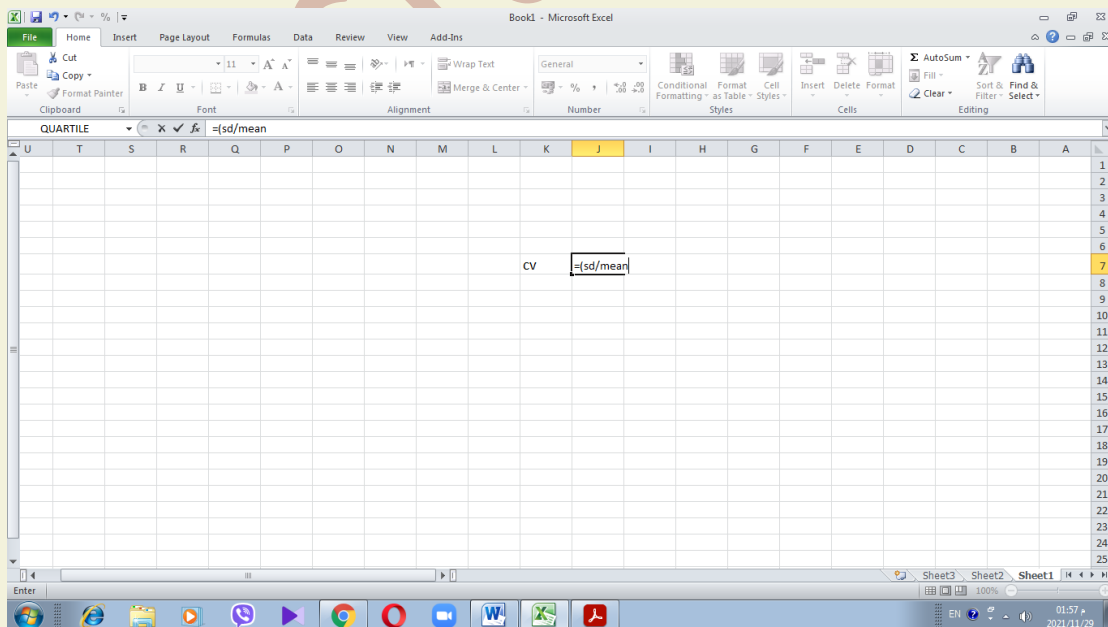
**e- Variance:**

$$\text{Variance} = \text{Standard deviation square (sd)}^2$$



**f- The coefficient of variation:**

$$Cv = \frac{sd}{mean}$$



**\*Hint: After performing any mathematical operation, press  
(enter)**

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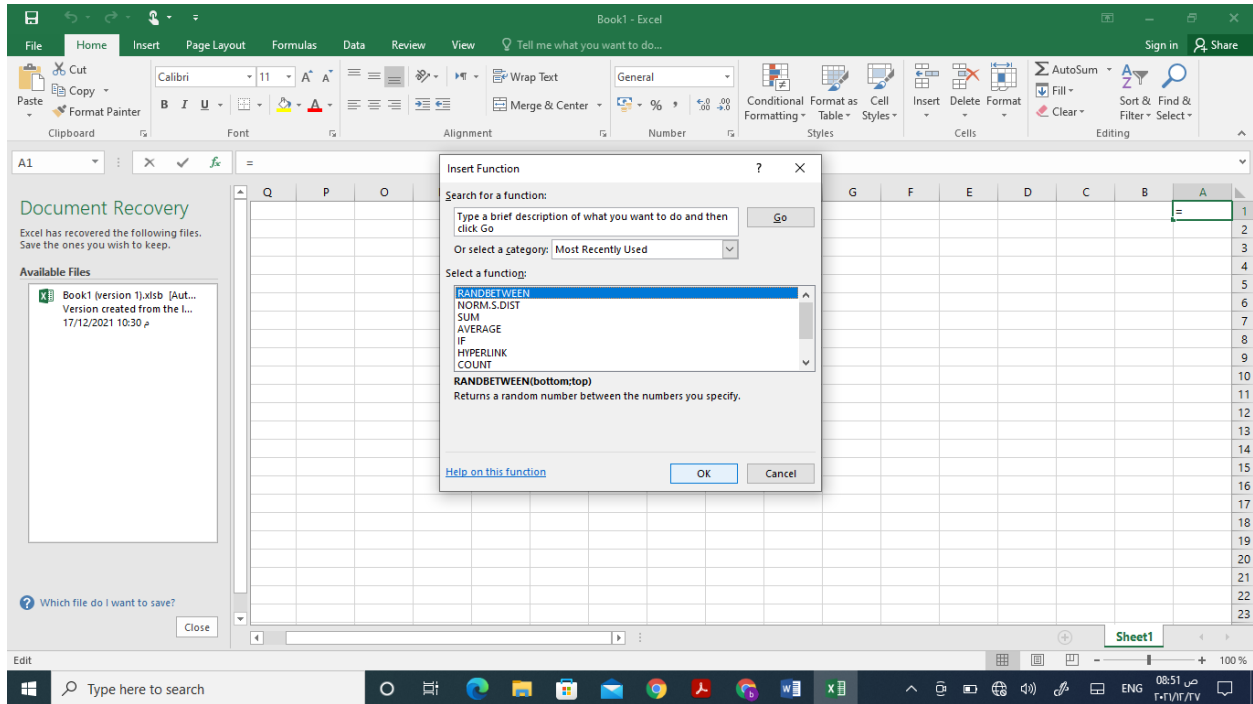
*Partical*

*Lecture 4*

## Probability:

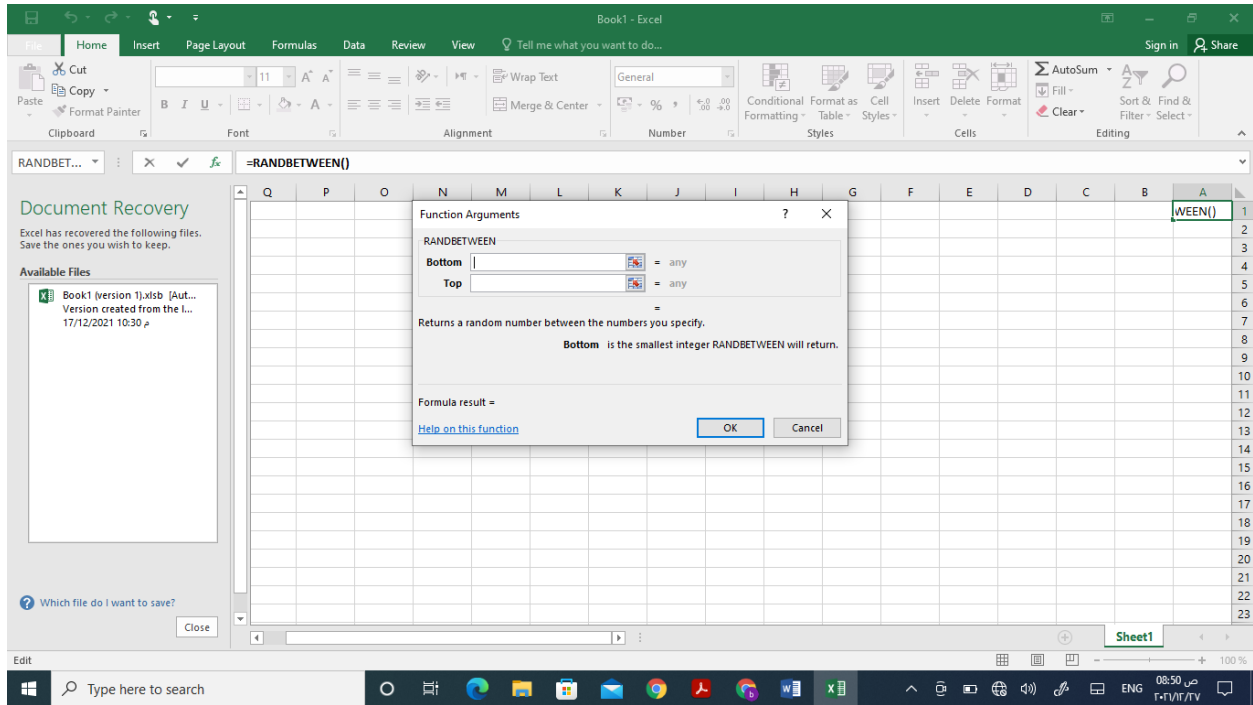
To find probability any number we do the following:

Step1: find the events : fx, **RANDBETWEEN**, ok .

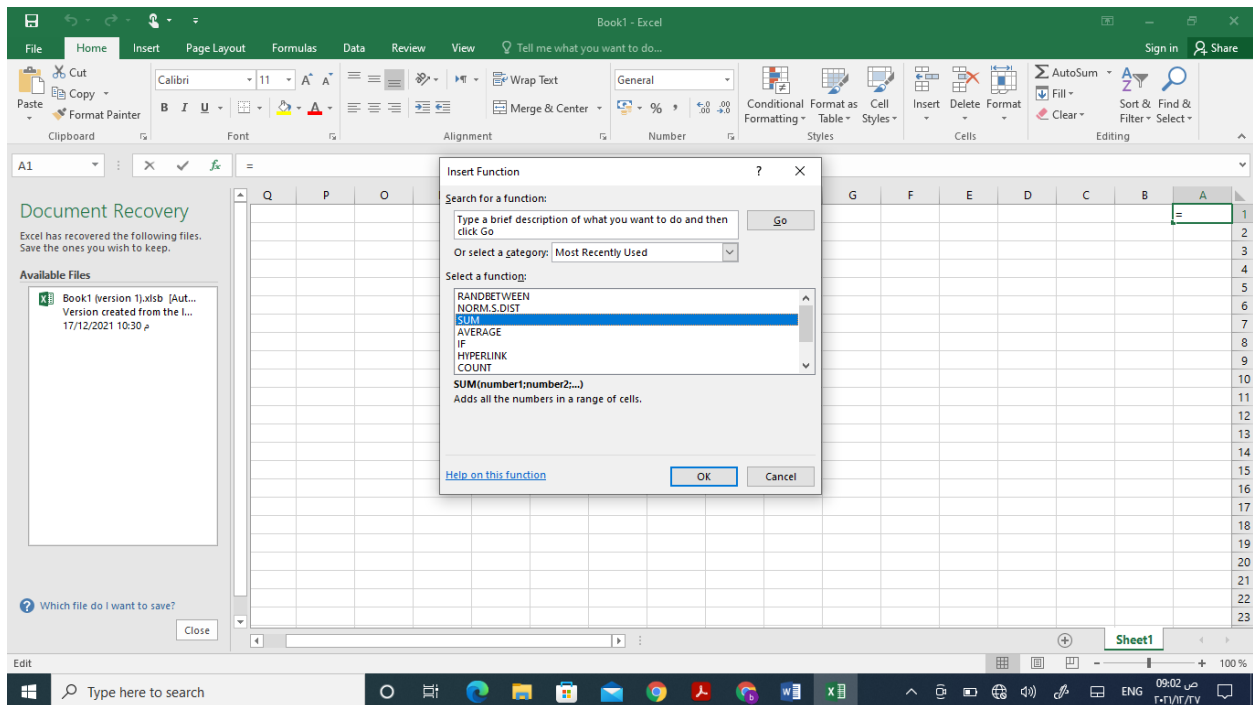


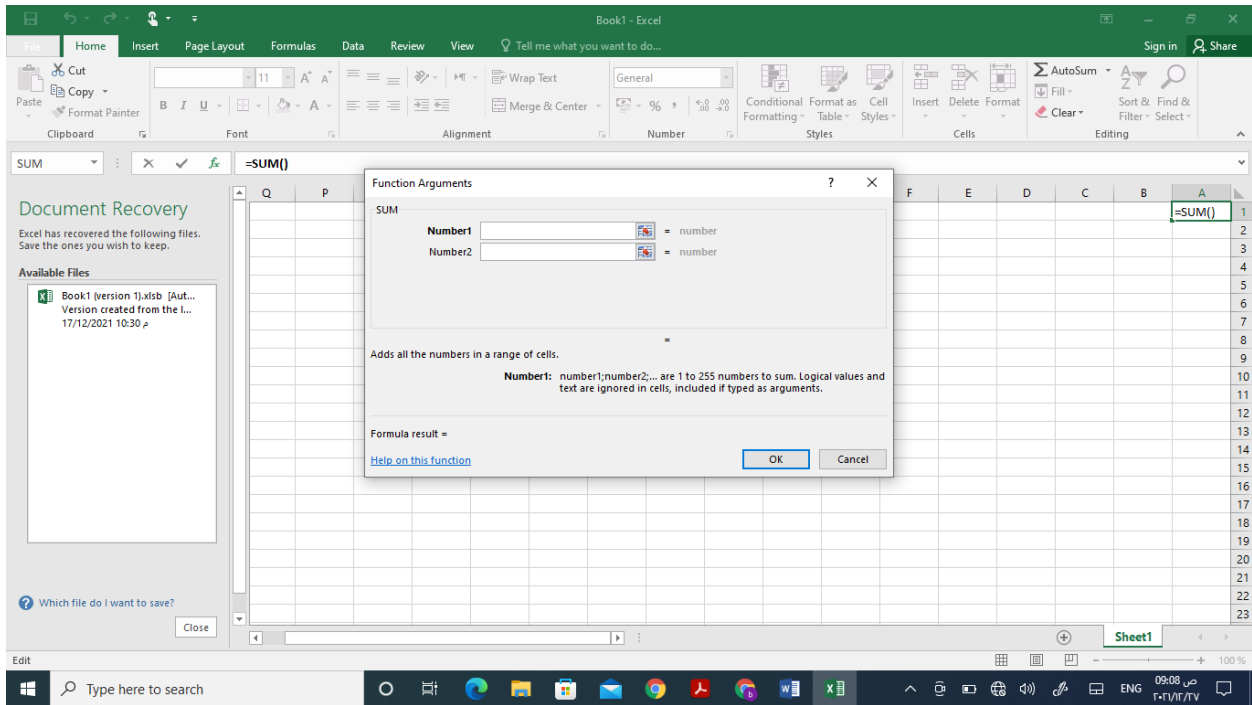


**Step2: put in Bottom min number and in top max number.**



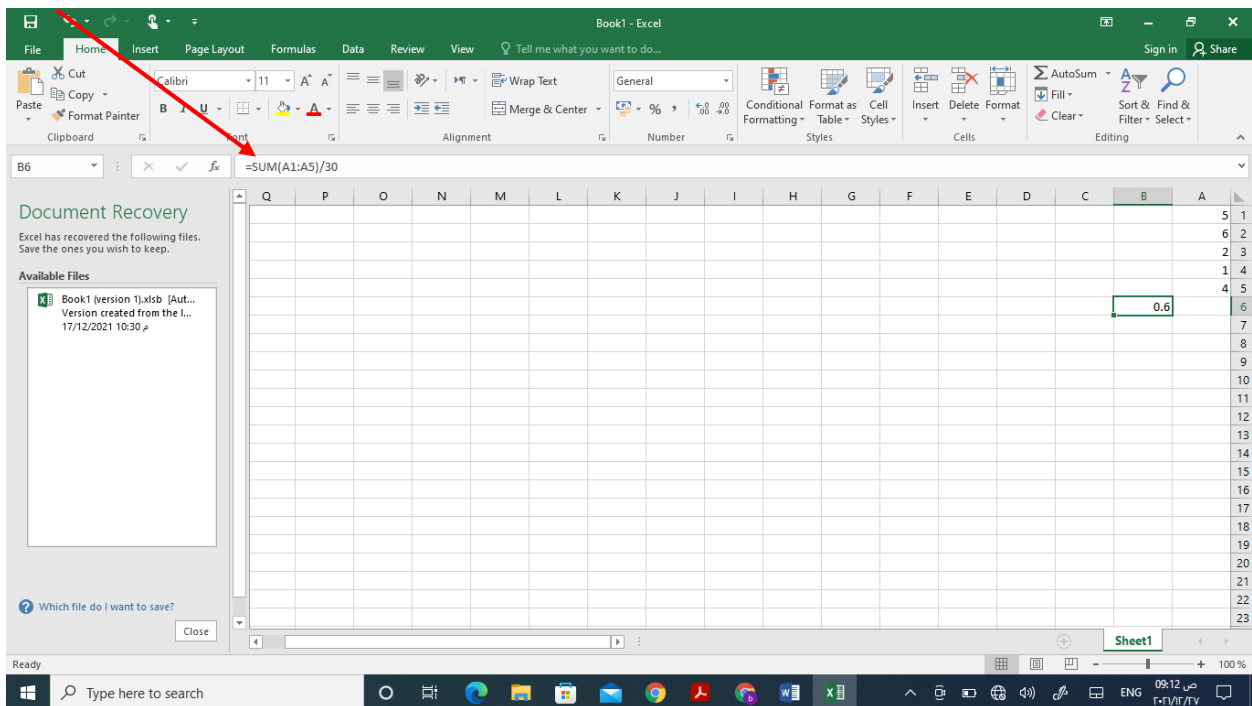
**Step3: sum, put events in number1, ok.**





**Step4:** divided by ( number\*number toss)

For example: one die toss five time=  $(6*5) =30$  then divided by (30)



## Normal distribution:

To find probability (z) we do following :

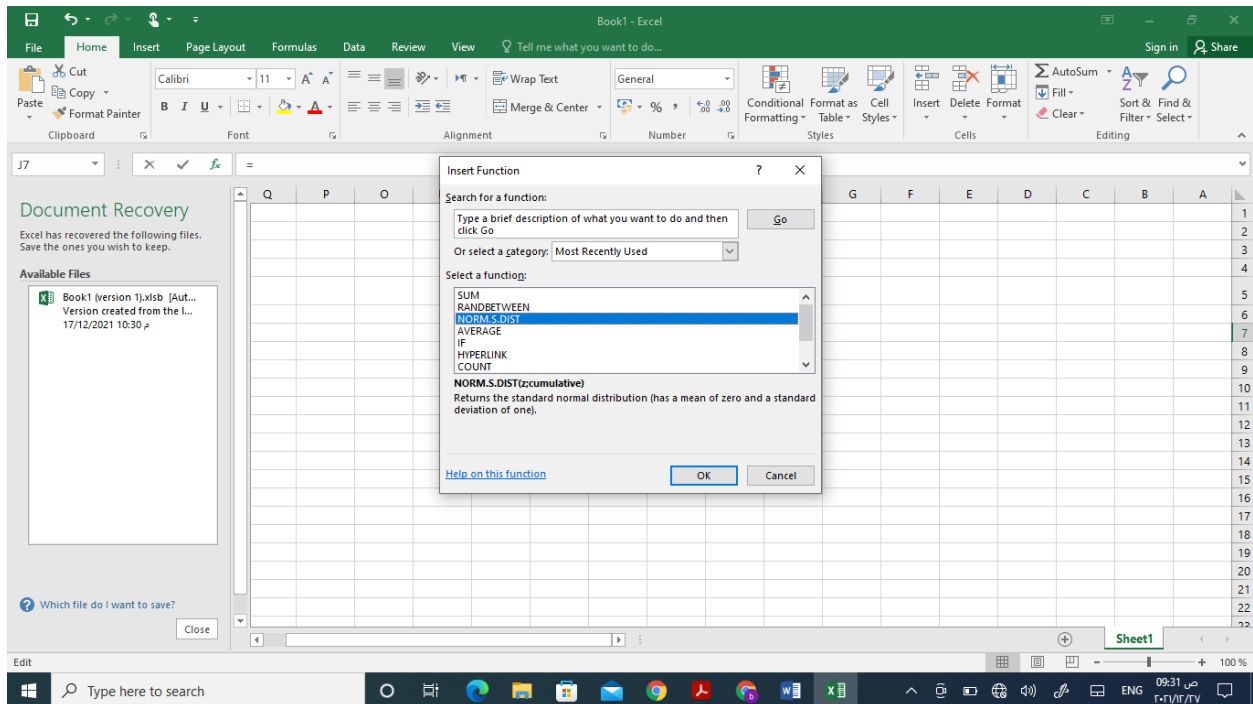
$$P(0.5 < z < 0.25)$$

$$P(z < 0.25) - p(z > 0.5)$$

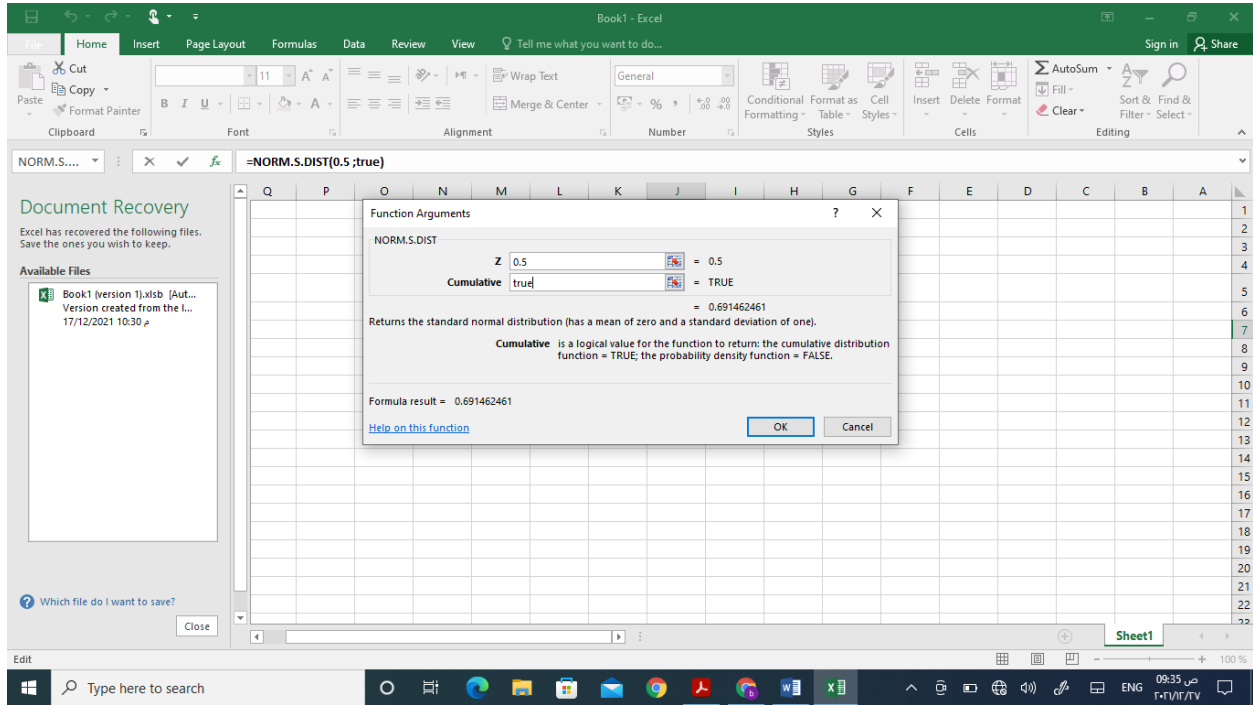
$$P(z > 0.5) = 1 - p(z < 0.5)$$

To find  $p(z < 0.25)$  or  $p(z < 0.5)$

**Step1: NORME.S.DIST , OK.**



**Step2: put the number (0.5 or 0.25 ) in (z) and put (true) in cumulative, ok.**



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*Lecture5*

## Hypotheses testing:

“Hypotheses Testing in the case of one sample”

### 1-Hypotheses Testing for single mean:

#### a- Z.Test:

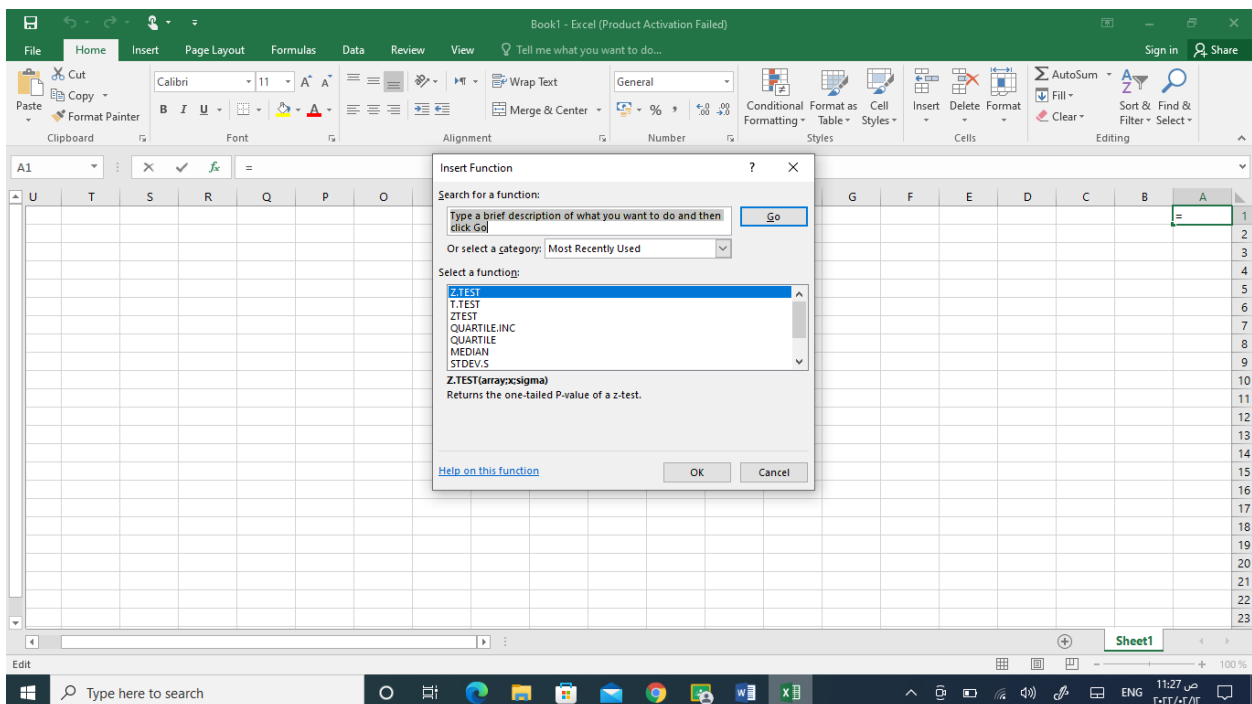
When the sample size is more than 30 (large sample)

To find the hypotheses testing in case as follow as:

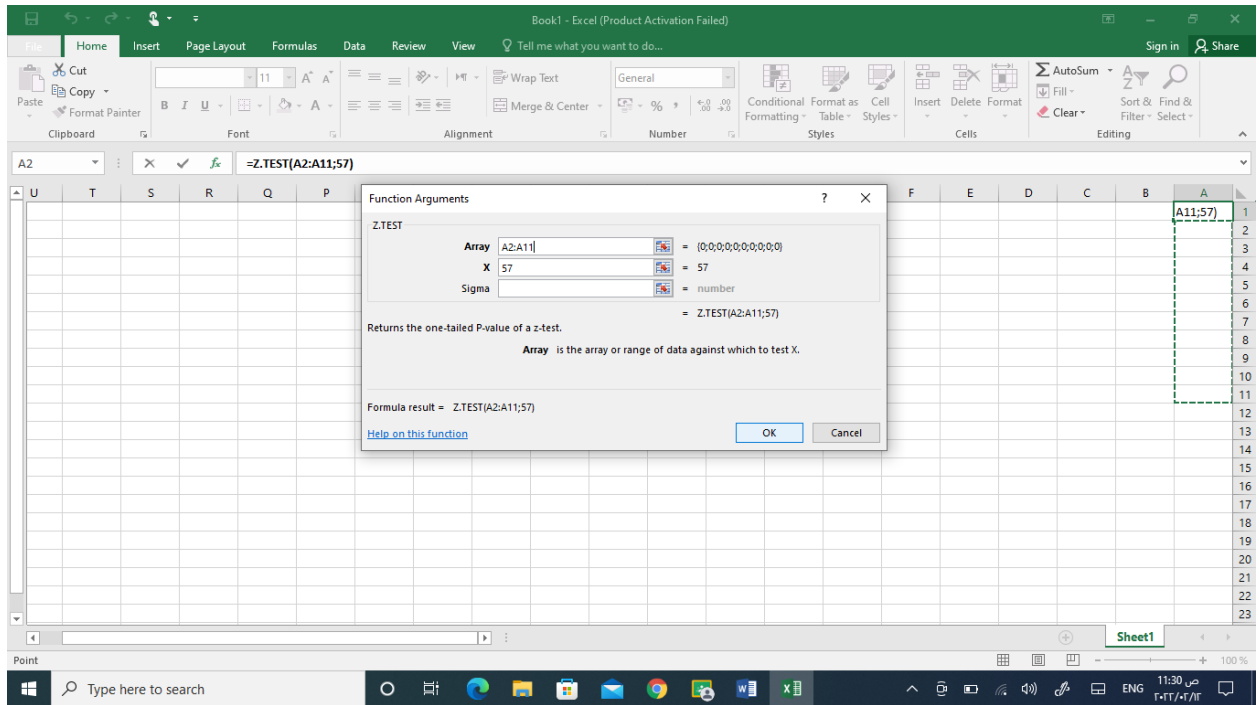
- 1- Choose the null hypotheses.
- 2- Choose the alternative hypotheses.
- 3- Calculate test function:

To find the test function (z) as follow

Step1: Fx, z.Test, ok.



**Step2: put the data in array and the mean value put in (x), ok.**



**4- Determine the level of significance:**

**By type test.**

**5-Statistical decision.**

**b- T.Test: when the sample is less than 30 (small sample ):**

**To find the hypotheses testing in case as follow as:**

**1- Choose the null hypotheses.**

**2- Choose the alternative hypotheses.**

**3- Calculate test function:**

**To find the test function (z) as follow**

**Step1: Data, Data Analyses, t-test: tow factor assuming unequal variance, ok.**

**Step2: the data for variable1 input the rang1 and the data for variable2 input the rang2.**

**Step3: put the mean value in hypothesized mean difference.**

**Step4: pressing labels and output rang, ok.**

**4- Determine the level of significance:**

**We take the tabular value from the results shown in the table after the test.**

**5-Statistical decision.**



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*Lecture 7*

## **Hypotheses testing:**

“Hypotheses Testing in the case of one sample”

Test hypotheses about the variance of more than two population:

## **One-way ANOVA table:**

To find the hypotheses testing in case as follow as:

- 1- Choose the null hypotheses.
- 2- Choose the alternative hypotheses.
- 3- Calculate test function:

To find the test function ( $F_c$ ) as follow

**Step1: Data, data analyses, Anova single factor, ok.**

**Step2: put the data in (input Rang) and pressing labels in first Row.**

**Step3: pressing output rang, ok.**

- 4- Determine the level of significance:

Find p-value.

- 5-Statistical decision.

If p-value  $> \alpha$  we reject  $H_0$  .

**\*Test hypotheses about simple linear regression:**

**To find the hypotheses testing in case as follow as:**

**1- Choose the null hypotheses.**

$$H_0: \beta_0 = \beta_1 = 0$$

**2- Choose the alternative hypotheses.**

$$H_1: \beta_0 \neq 0$$

$$H_1: \beta_1 \neq 0$$

**3- Calculate equation linear regression:**

**To find the equation as follow:**

**Step1: Data, Data Analyses, regression, ok.**

**Step2: put the data(y) input y rang and put the data x input x rang.**

**Step3: pressing labels and confidence (95% or 99%).**

**Step4: pressing output range and normal probability plot, ok.**

**4- Determine the level of significance:**

**Finding p-value.**

**5-Statistical decision.**

**If (p-value of  $\beta_0 > \alpha$  and p – value of  $\beta_1 > \alpha$  )**

**Then reject  $H_0$  .**

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PRACTICAL

Prepared by

Baneen Ahmed

There are several methods used in the practical side of the statistics subject, but there is a special method related to the subject of the practical side of the vital statistics subject, and we use the excel system because it is based on tables considering the statistics subject as mathematical ...

### **How to enter the Microsoft Excel system**

There are four ways to enter the Excel program,

- it is through (start).
- It is through desktop.
- After that, the Excel program page is created on the desktop.

The main interface of the program

Main interface components

- 1- Address bar.
- 2- Quick access bar.
- 3- information bar.
- 4- Sheet tab bar.
- 5- (Fx) Function Insert Button.

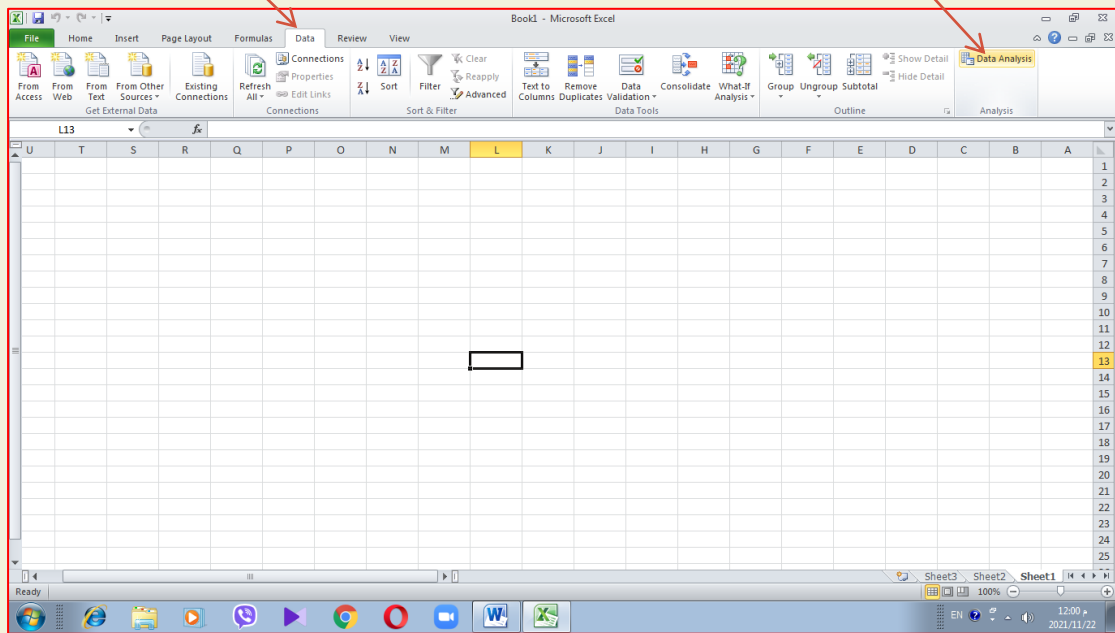
**Presenting data:**

**1- Tables:**

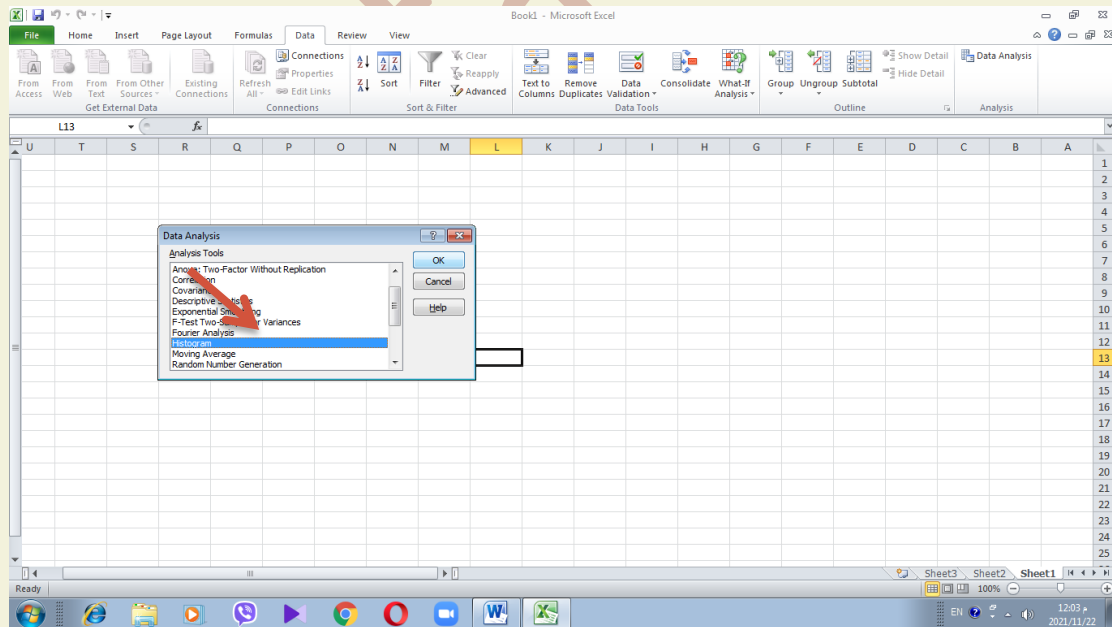
**Frequency table:**

To create a frequency table for academic years, we do the following:

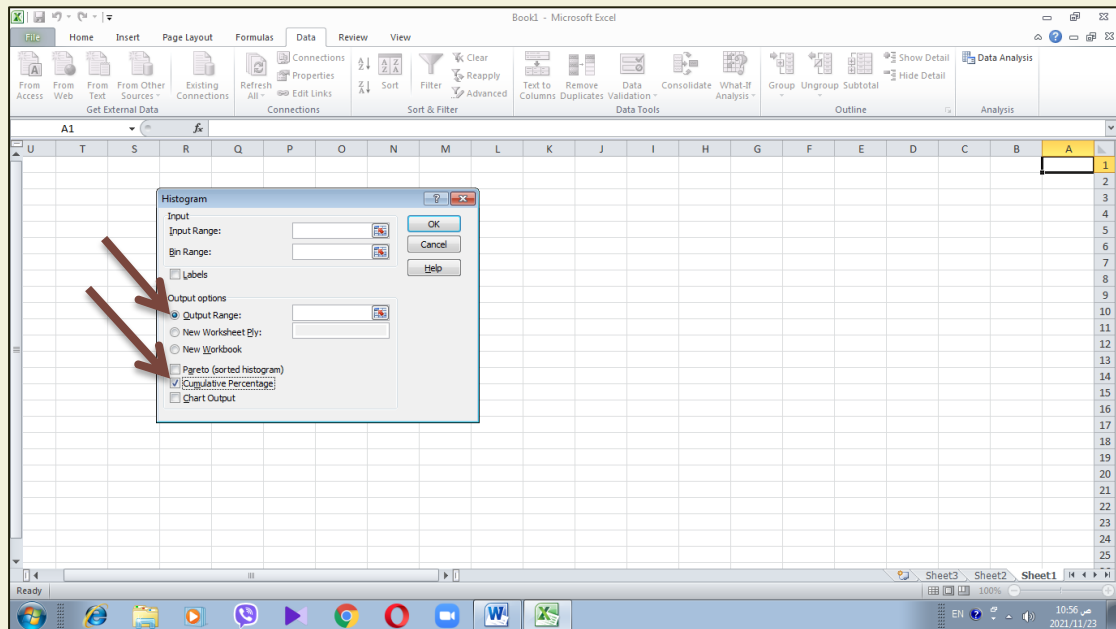
## Step1: Data→Data analysis



## Step2: histogram

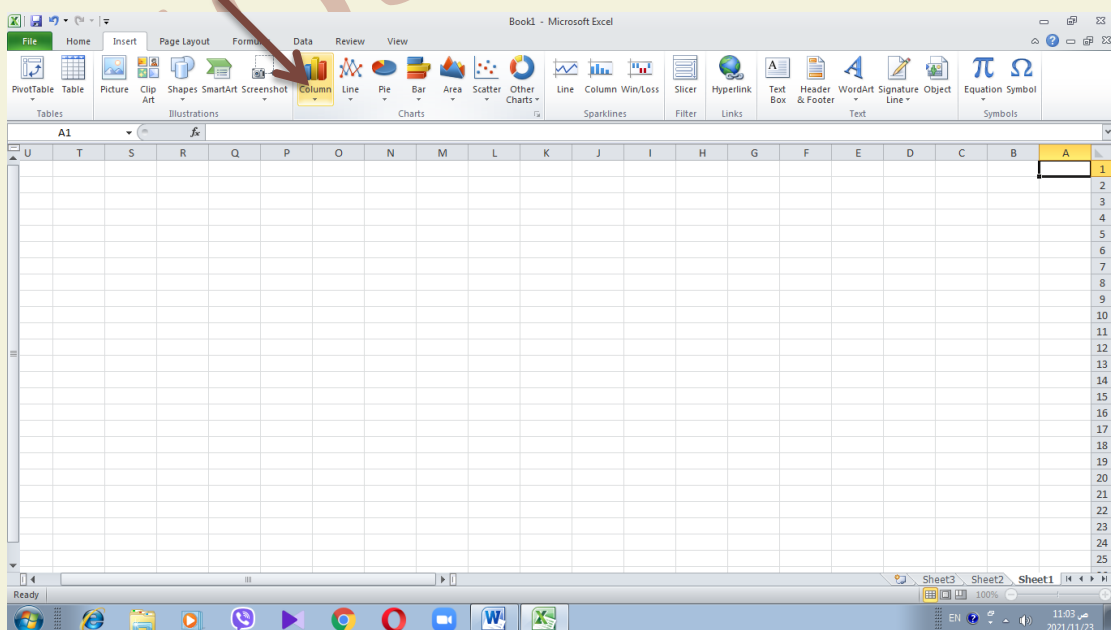


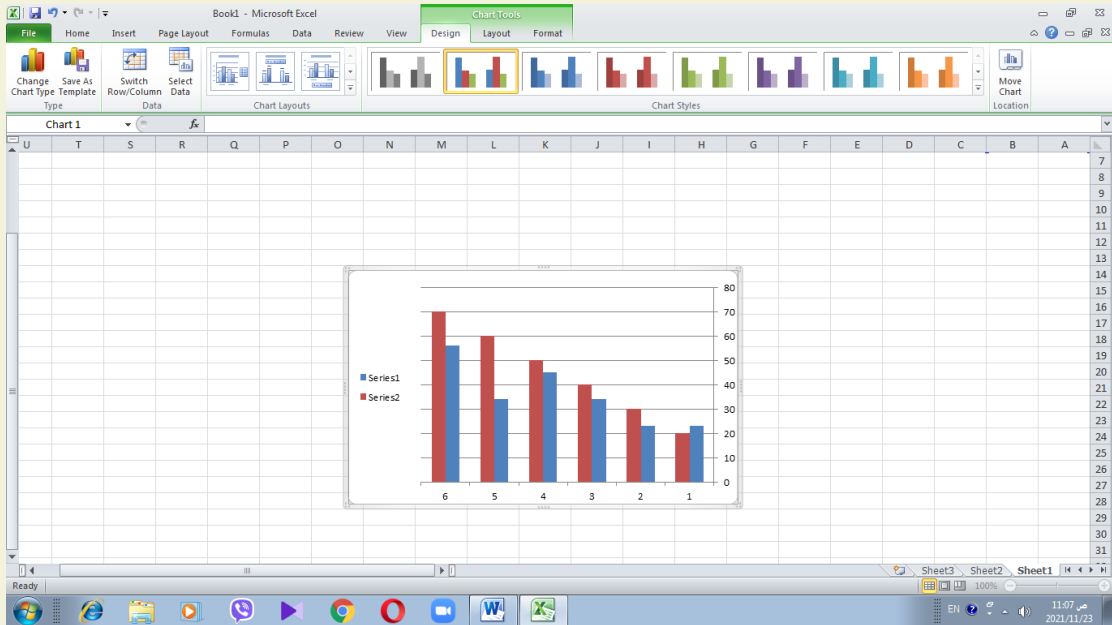
**Step3: enter the data in input range and the interval in Bin range:**



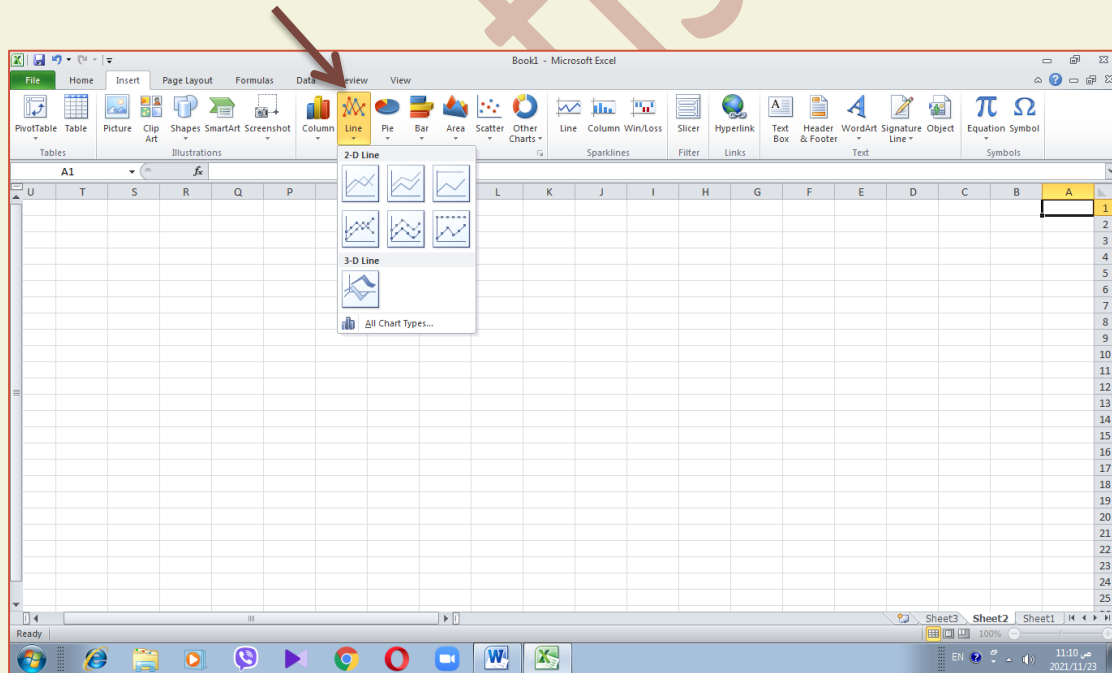
## 2- Charts:

**a- To draw histogram charts: insert, charts(column)**

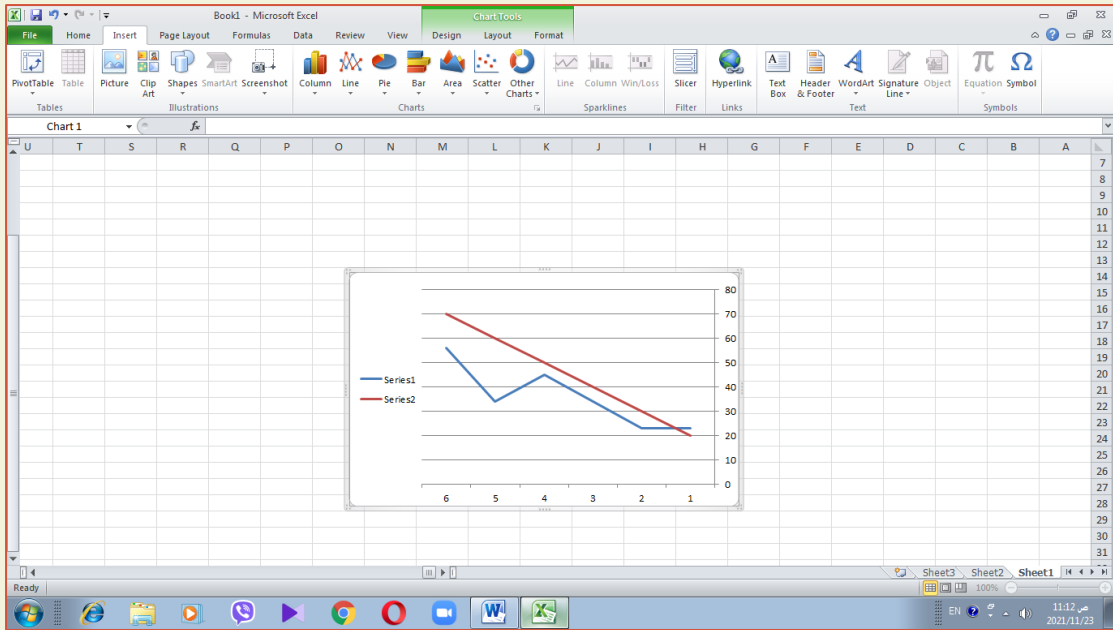




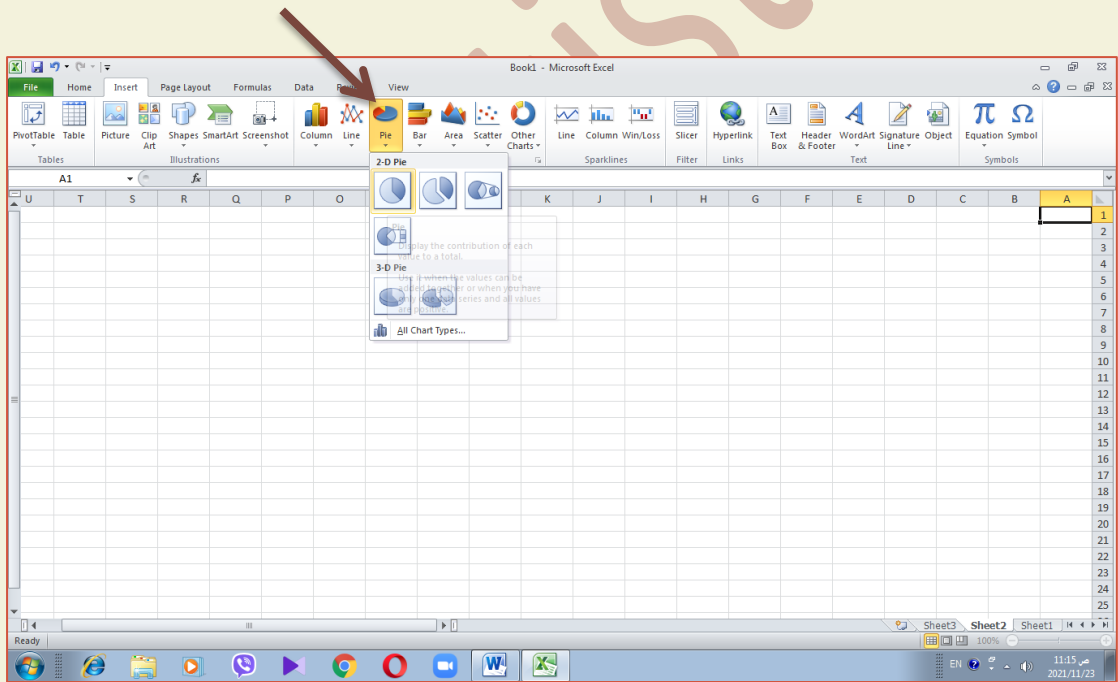
**b- To draw polygon chart: insert, chart(line):**

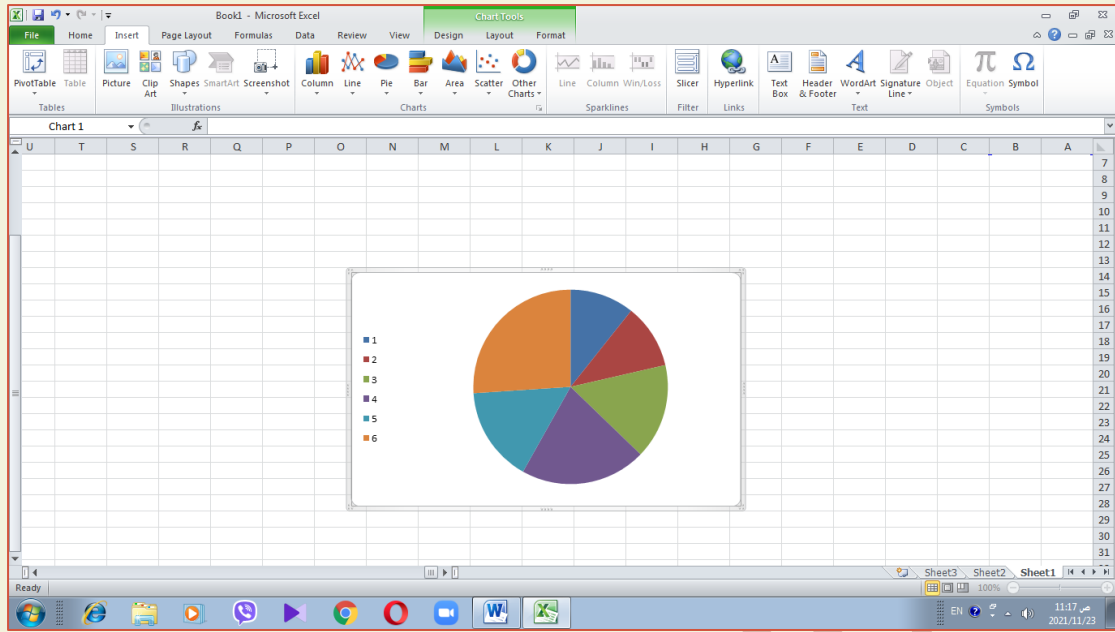






**c- To draw pie circle: insert, chart( pie) :**





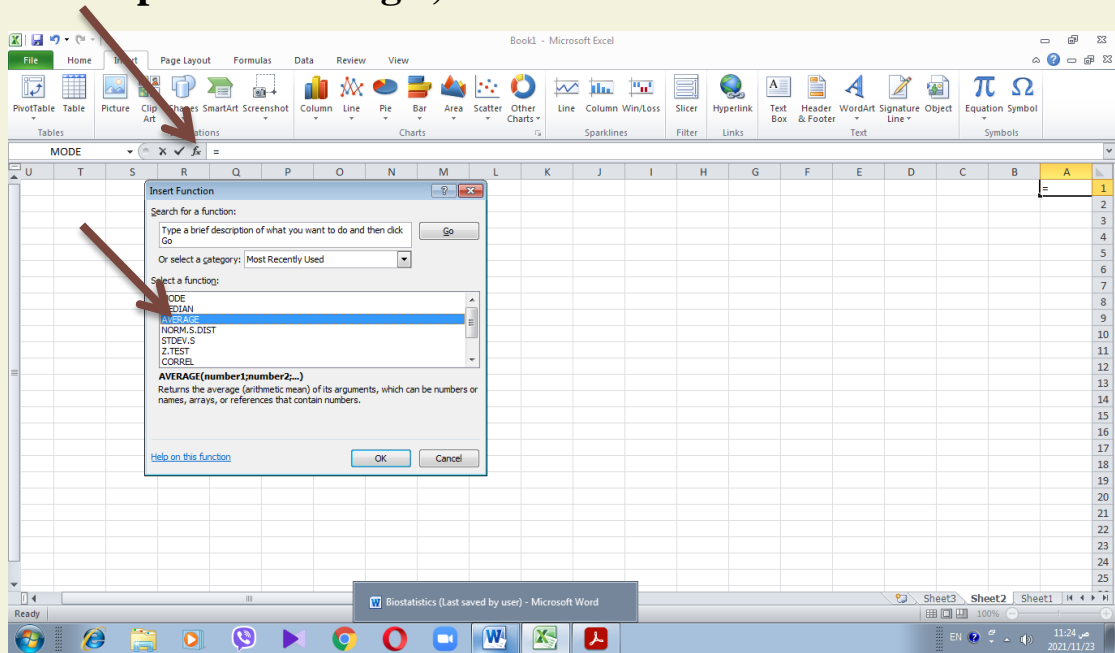
Biostatistics

# DESCRIPTIVE STATISTICS

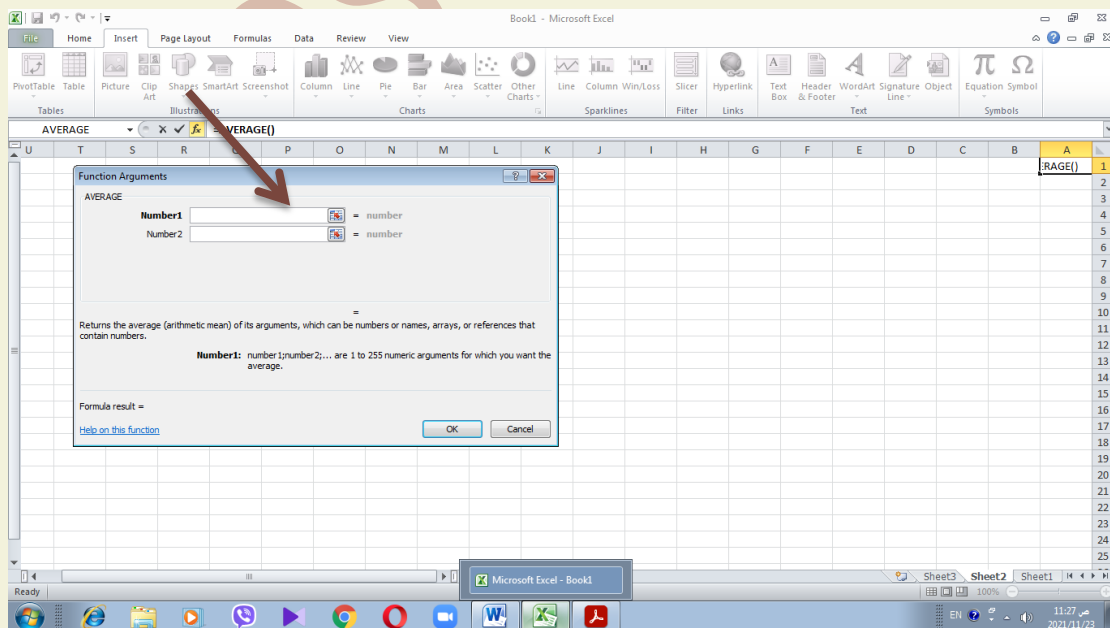
## 1- Measures of central tendency:

### a- Mean:

Step1: fx→avarege , ok

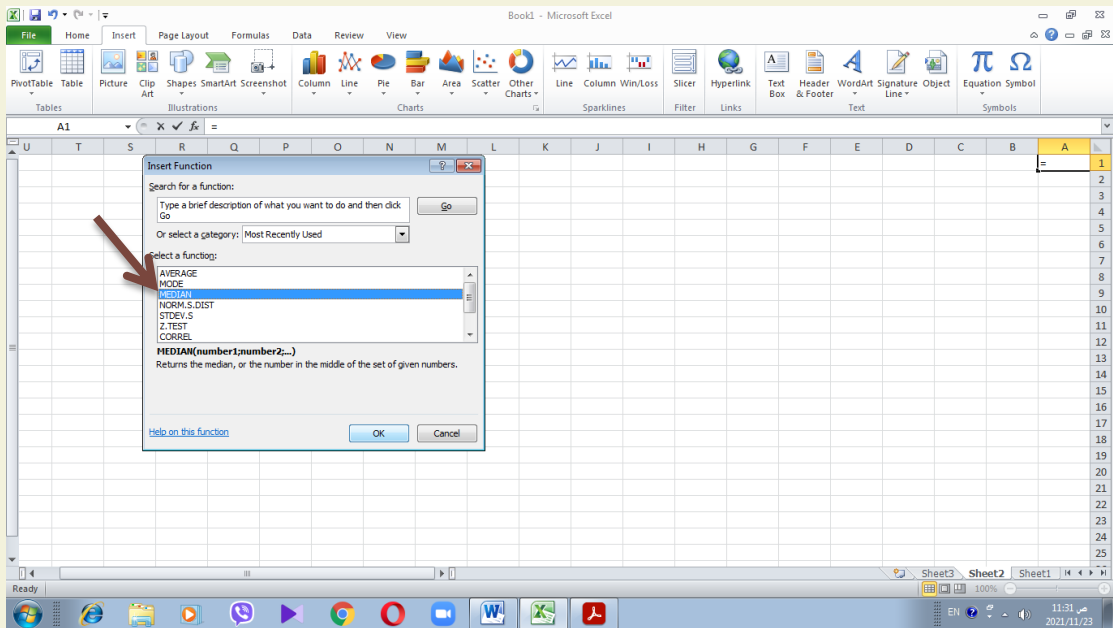


Step2: put the data in the cell ,ok.

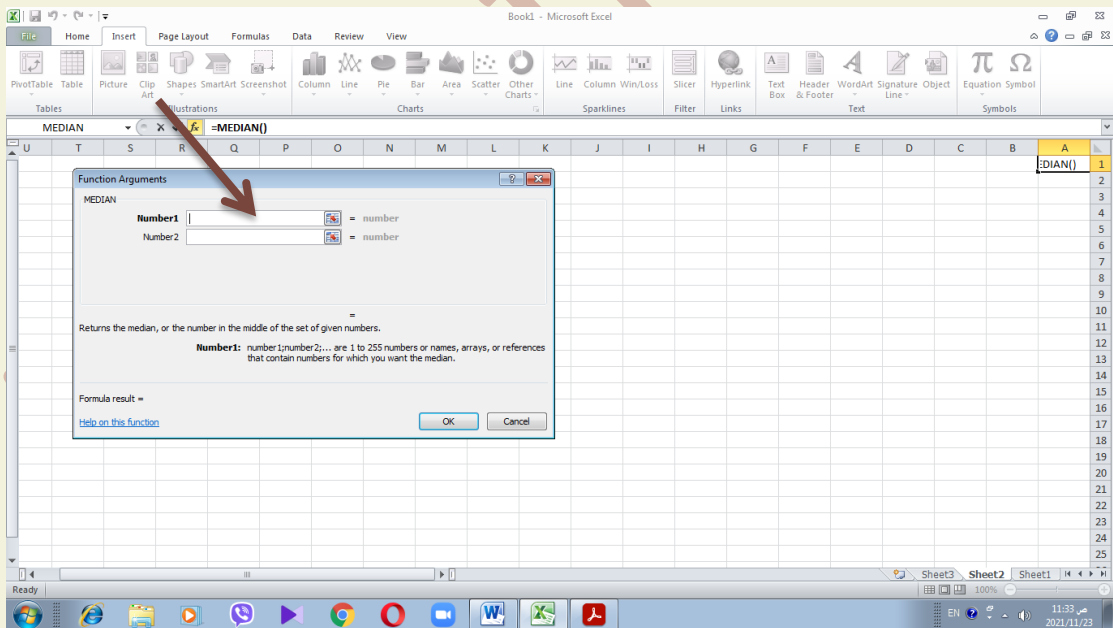


## b- Median:

### Step1: fx, median, ok

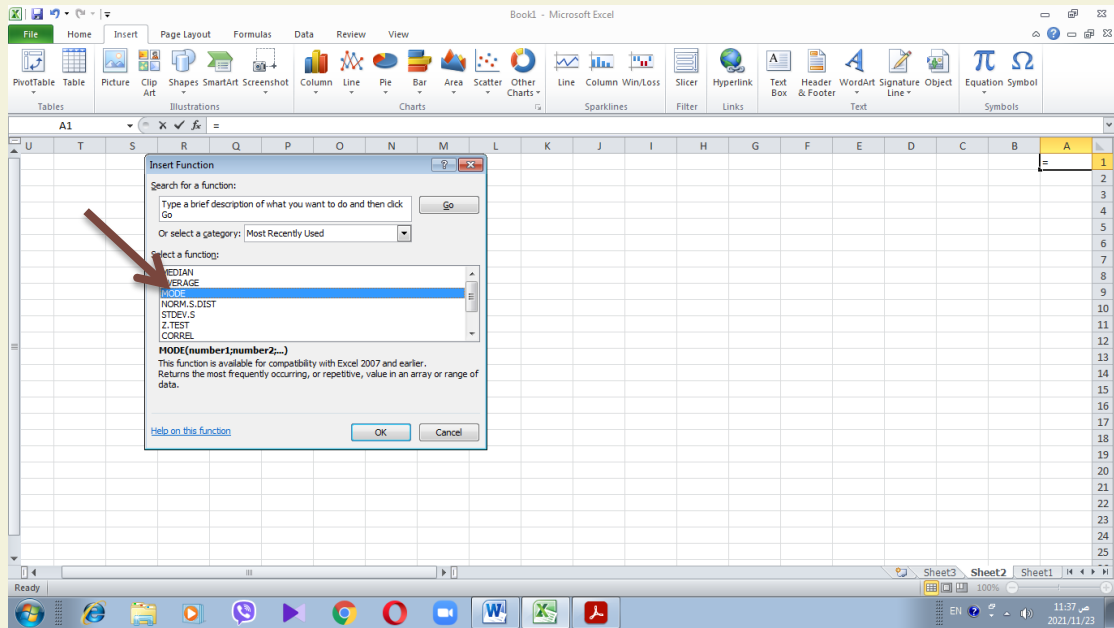


### Step2: put the data in the cell, ok



## c- Mode:

### Step1 :Fx, mode, ok



### Step2: put the data in the cell, ok :

