

# Mechi Multiple Campus

(Tribhuvan University)

Bhadrapur, Jhapa



## Lab Report of Probability & Statistics (CAST 202)

Faculty of Humanities & Social Sciences

Tribhuvan University

Kritipur, Nepal

### Submitted By

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**Roll No:** 58 (3<sup>rd</sup> Semester)

### Submitted To

Mechi Multiple Campus

Department of Bachelor in Computer

Bhadrapur, Jhapa, Nepa

## **CERTIFICATE FROM THE SUPERVISOR**

This is to certify that the Lab Report entitled “**Probability and Statistics**” is an academic work done by “Santosh Bhandari” submitted in the partial fulfillment of the requirements for the degree of Bachelor of Computer Application at Faculty of Humanities and Social Sciences, Tribhuvan University under my guidance & supervision. To the best of my knowledge, the work performed by him in the Lab Report is his own creation.

Signature of the Supervisor:

Name: Kumar Subedi

Designation: Professor

Date:

## **ACKNOWLEDGEMENT**

This report is specially designed to develop and enhance the knowledge of student in SPSS software. The assigned report is for the partial fulfillment of BCA (Bachelor in Computer Application) third semester student.

I would like to express my sincere gratitude to my subject teacher “**Mr. Kumar Subedi**” and the whole faculty of Humanities and Social Sciences who gave me this opportunity to fulfill this report. He gave me moral support and guided in different matters regarding the topics. He had been very kind and patient while suggesting me the outlines. I thank him for his overall support.

I am also thankful to everyone who all supported me, for that I have completed my report effectively and moreover on time. They gave me many helpful comments which helped me a lot in preparing it.

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## **Introduction to SPSS**

The SPSS (Statistical Package for the Social Science) is the software for editing and analyzing all sorts of data. These data may come from basically any source: scientific research, a customer database etc. SPSS can open all file formats that are commonly used for structured data such as:

- i. Spreadsheets from MS-Excel or Open Office
- ii. Plain text files (.txt or .csv)
- iii. Relational (SQL) Database
- iv. Stata and SAS

When you use SPSS, you work in one of several windows: the data view, the variable view, the output view, the draft output view, and the script view. Eventually, you will also use the syntax editor to save or refine your queries.

**Data View:** The data view displays your actual data and any new variables you have created.

**Variable View:** At the bottom of the data window, you will notice a tab labeled variable view. The variable view window contains the definitions of each variable in your data set including its name, type, label, size, alignment, and other information.

**Output Window View:** The output window is where you see the results of your various queries such as frequency distributions, cross-tabs, statistical tests, and charts. If you have worked with Excel, you are probable used to seeing all your work on one page, charts, data, and calculations. In SPSS, each window handles a separate task. The output window is where you see your results.

## Calculating Mean, Median and Mode of Individual Series

**Data: 12, 9, 13, 10, 9, 11, 14, 15, 17, 20, 12**

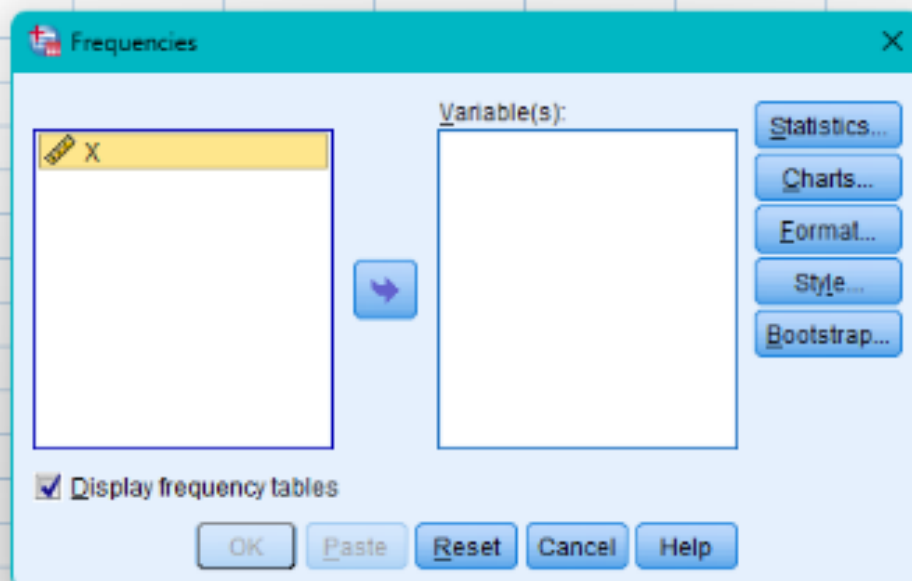
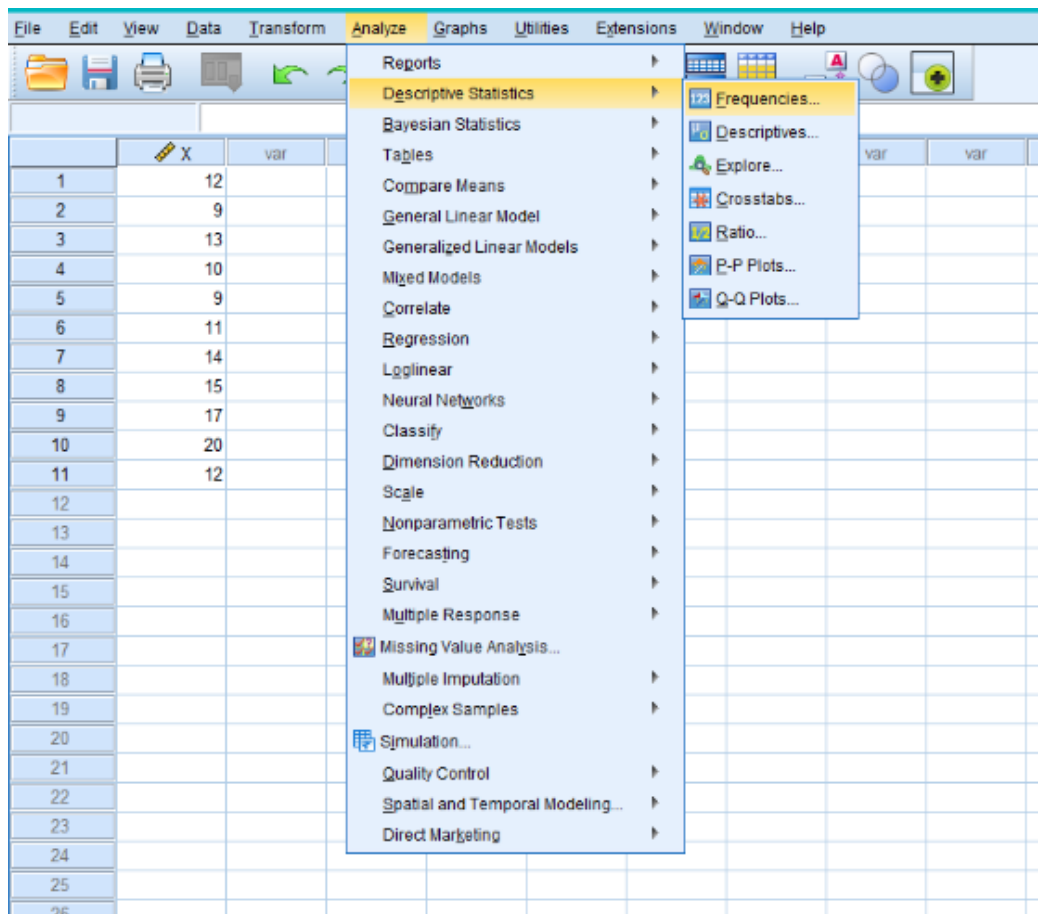
Declaring the Variable as a X:

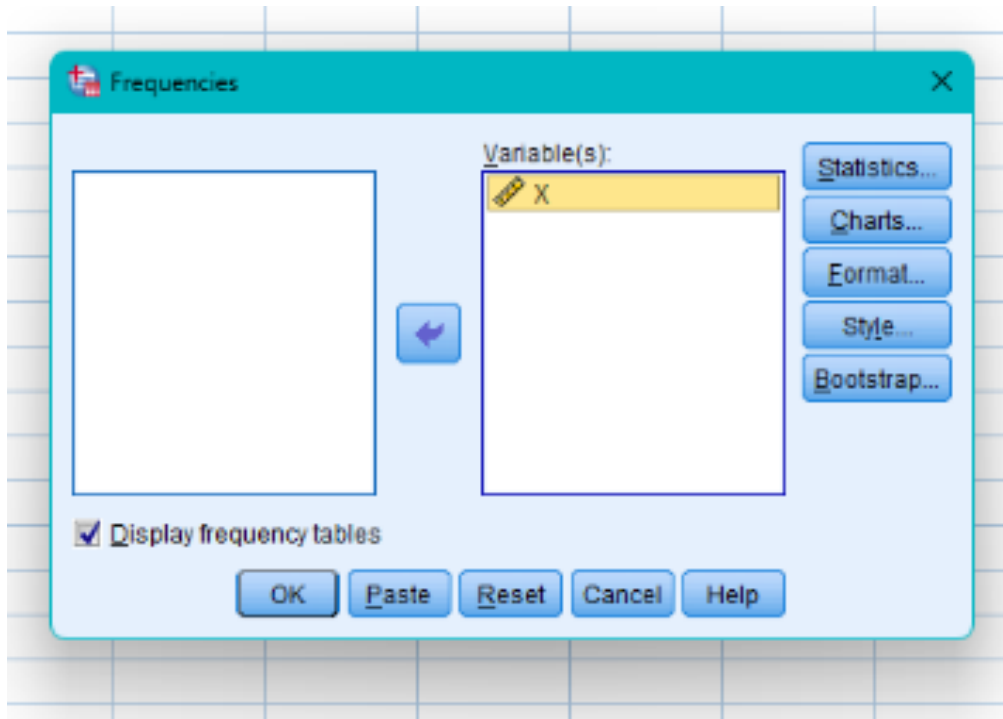
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	X	Numeric	8	0		None	None	8	Right	Scale	Input
2											
3											

Inserting the Given Data:

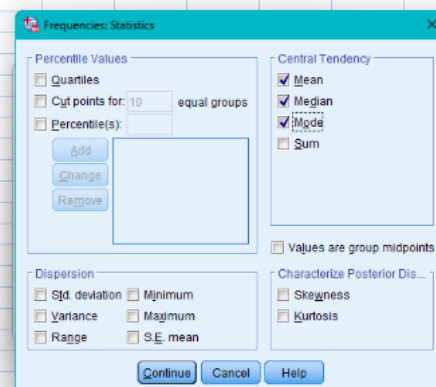
	X	var	var	var	var	var	var	var	v
1	12								
2	9								
3	13								
4	10								
5	9								
6	11								
7	14								
8	15								
9	17								
10	20								
11	12								
12									

Choosing the Variable and Selecting the Option we Want to Calculate:





	X	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	12																	
2	9																	
3	13																	
4	10																	
5	9																	
6	11																	
7	14																	
8	15																	
9	17																	
10	20																	
11	12																	
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24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		
32																		
33																		
34																		





Output of the Given Data:

### Statistics

X

N	Valid	11
	Missing	0
Mean		12.91
Median		12.00
Mode		9 <sup>a</sup>

a. Multiple modes exist.  
The smallest value  
is shown

X

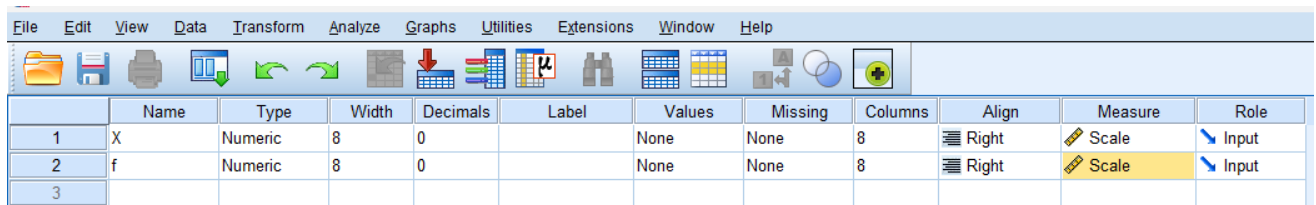
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9	2	18.2	18.2	18.2
	10	1	9.1	9.1	27.3
	11	1	9.1	9.1	36.4
	12	2	18.2	18.2	54.5
	13	1	9.1	9.1	63.6
	14	1	9.1	9.1	72.7
	15	1	9.1	9.1	81.8
	17	1	9.1	9.1	90.9
	20	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

## Calculating Mean, Median and Mode of Discrete Series

Data:

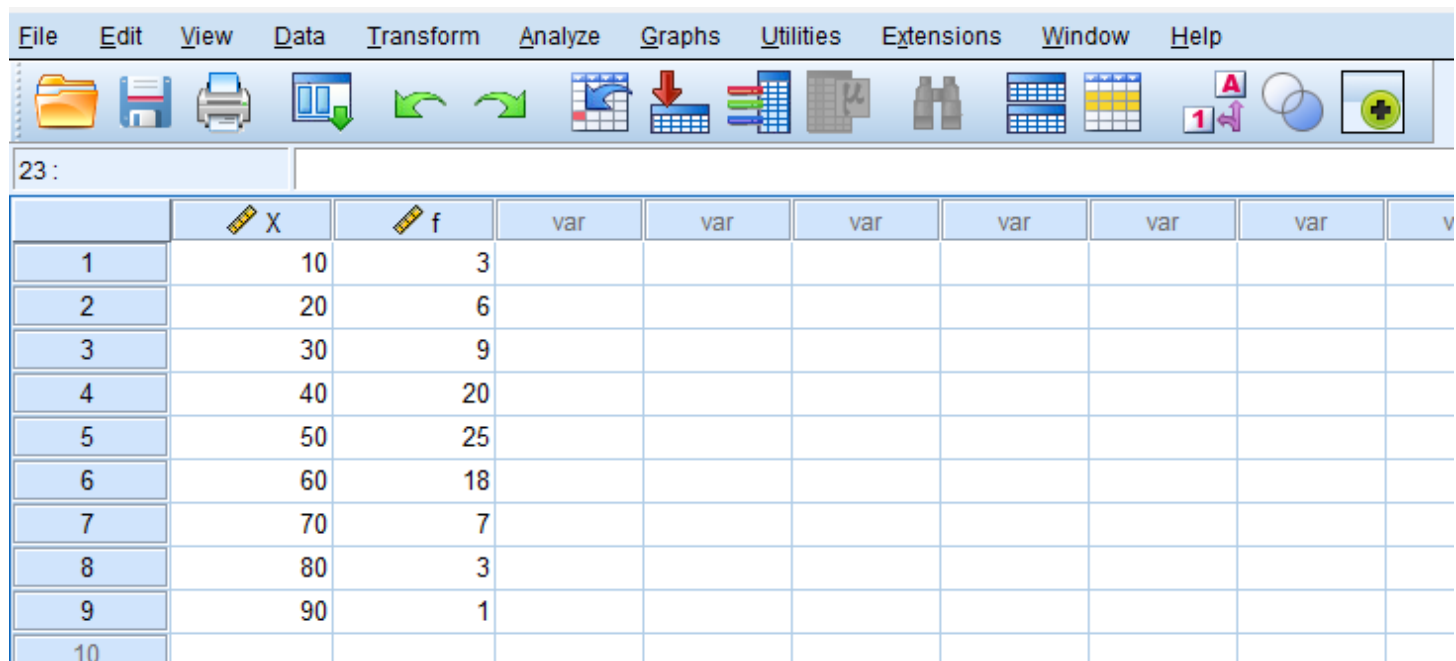
Marks Obtained(X)	10	20	30	40	50	60	70	80	90
No. of Students(f)	3	6	9	20	25	18	7	3	1

Declaring the Variable as X and f.



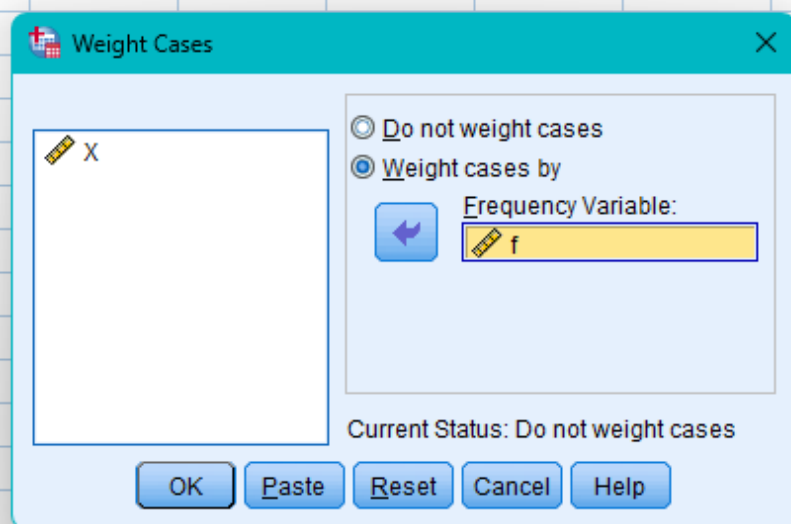
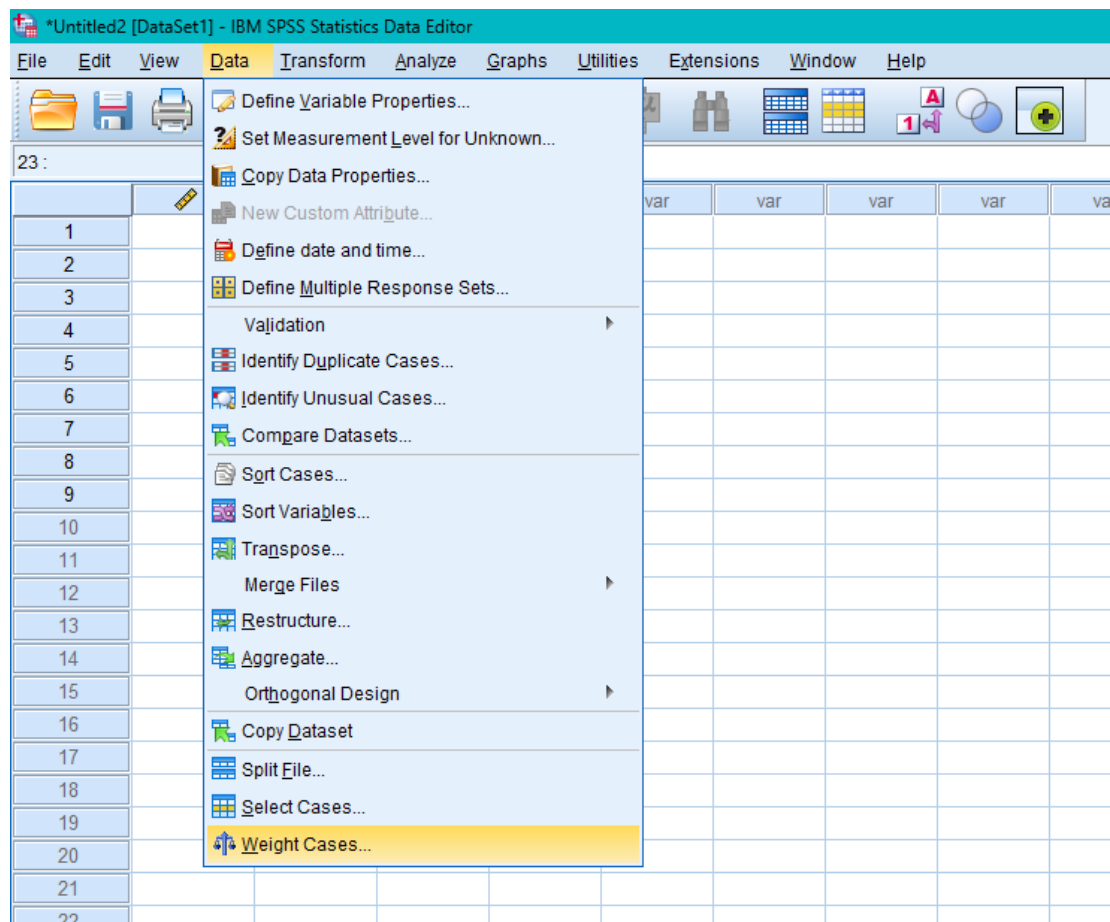
	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	X	Numeric	8	0		None	None	8	Right	Scale	Input
2	f	Numeric	8	0		None	None	8	Right	Scale	Input
3											

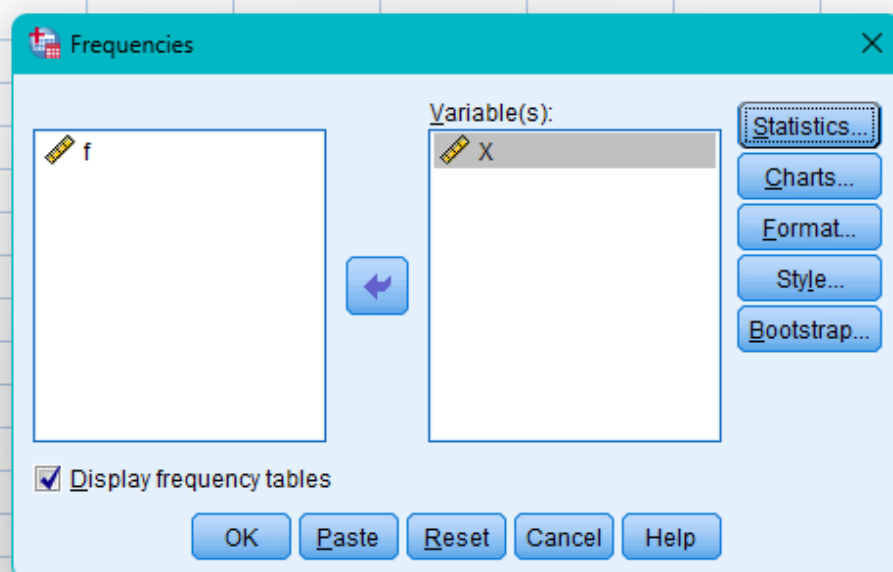
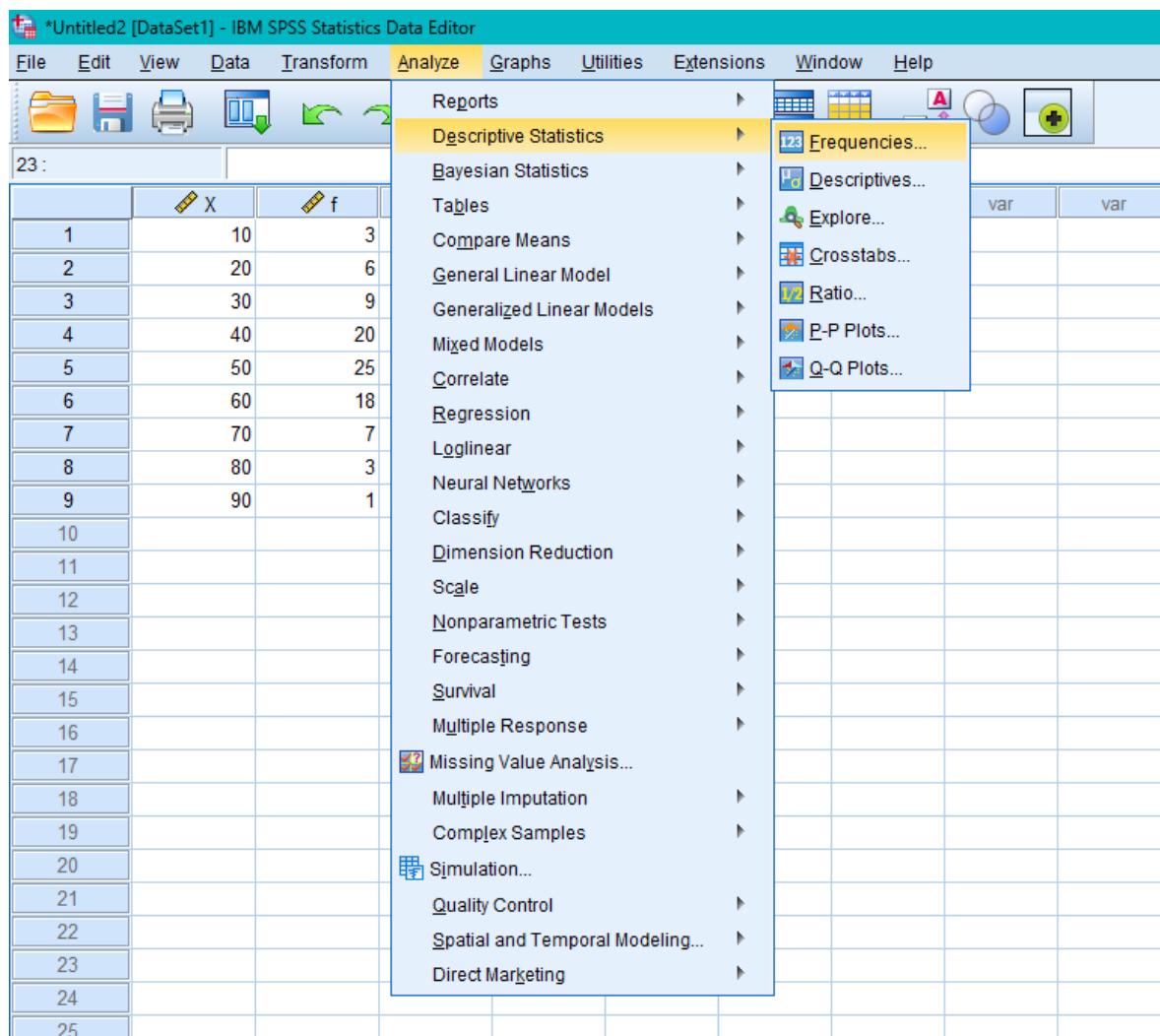
Inserting the Given Data:



	X	f	var	var	var	var	var	var	v
1	10	3							
2	20	6							
3	30	9							
4	40	20							
5	50	25							
6	60	18							
7	70	7							
8	80	3							
9	90	1							
10									

Choosing the Variable and Frequency and also Selecting the Option we Want to Calculate:





File
Edit
View
Data
Transform
Analyze
Graphs
Utilities
Extensions
Window
Help

23 :

	X	f	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var	var
1	10	3																	
2	20	6																	
3	30	9																	
4	40	20																	
5	50	25																	
6	60	18																	
7	70	7																	
8	80	3																	
9	90	1																	
10																			
11																			
12																			
13																			
14																			
15																			
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17																			
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24																			
25																			
26																			
27																			
28																			
29																			
30																			
31																			

Percentile Values

☐ Quantiles
 

Cut points for: 10

equal groups

☐ Percentile(s):
 

Add

Change

Remove

Central Tendency

☒ Mean
 ☒ Median
 ☒ Mode
 ☐ Sum

☐ Values are group midpoints

Dispersion

☐ Std. deviation
 ☐ Minimum
 ☐ Variance
 ☐ Maximum
 ☐ Range
 ☐ S.E. mean

Characterize Posterior Dis...

☐ Skewness
 ☐ Kurtosis

Continue

Cancel

Help

Output of the Given Data:

Statistics		
X		
N	Valid	92
	Missing	0
Mean		47.50
Median		50.00
Mode		50

X					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	3	3.3	3.3	3.3
	20	6	6.5	6.5	9.8
	30	9	9.8	9.8	19.6
	40	20	21.7	21.7	41.3
	50	25	27.2	27.2	68.5
	60	18	19.6	19.6	88.0
	70	7	7.6	7.6	95.7
	80	3	3.3	3.3	98.9
	90	1	1.1	1.1	100.0
	Total	92	100.0	100.0	

## Calculating Quartiles, Deciles and Percentiles of Individual Series

Data: 18, 20, 15, 16, 25, 19, 12, 22, 14

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help									
11:									
	X	var	var	var	var	var	var	var	var
1	18								
2	20								
3	15								
4	16								
5	25								
6	19								
7	12								
8	22								
9	14								

Output of the Given Data:

### Statistics

X		
N	Valid	9
	Missing	0
Percentiles	16.66666667	13.33
	25	14.50
	33.33333333	15.33
	45	17.00
	50	18.00
	66.66666667	19.67
	75	21.00
	83.33333333	23.00

X					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12	1	11.1	11.1	11.1
	14	1	11.1	11.1	22.2
	15	1	11.1	11.1	33.3
	16	1	11.1	11.1	44.4
	18	1	11.1	11.1	55.6
	19	1	11.1	11.1	66.7
	20	1	11.1	11.1	77.8
	22	1	11.1	11.1	88.9
	25	1	11.1	11.1	100.0
Total		9	100.0	100.0	

## Calculating Quartiles, Deciles and Percentiles of Discrete Series

Data:

Marks Obtained(X)	12	15	18	21	24	27
No. of Students(f)	7	11	16	10	6	2

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help									
23 :									
	X	f	var	var	var	var	var	var	
1	12	7							
2	15	11							
3	18	16							
4	21	10							
5	24	6							
6	27	2							
7									

Output of the Given Data:

X		
N	Valid	52
	Missing	0
Percentiles	14.28571429	13.71
	25	15.00
	28.57142857	15.00
	42.85714286	18.00
	50	18.00
	57.14285714	18.00
	60	18.00
	71.42857143	21.00
	75	21.00
	85.71428571	24.00

X					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12	7	13.5	13.5	13.5
	15	11	21.2	21.2	34.6
	18	16	30.8	30.8	65.4
	21	10	19.2	19.2	84.6
	24	6	11.5	11.5	96.2
	27	2	3.8	3.8	100.0
	Total	52	100.0	100.0	



## Calculating Range, S.D and C.V of Individual Series

Data: 12, 13, 15, 16, 18

File	Edit	View	Data	Transform	Analyze	Graphs	Utilities	Extensions	Window	Help
10 :										
	X	var	var	var	var	var	var	var	var	var
1	12									
2	13									
3	15									
4	16									
5	18									

Output of Given Data:

### Statistics

X		
N	Valid	5
	Missing	0
Std. Deviation		2.387
Variance		5.700
Range		6

X					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12	1	20.0	20.0	20.0
	13	1	20.0	20.0	40.0
	15	1	20.0	20.0	60.0
	16	1	20.0	20.0	80.0
	18	1	20.0	20.0	100.0
Total		5	100.0	100.0	

## Calculating Range, S.D and C.V of Discrete Series

Data:

Marks Obtained(X)	12	15	18	21	24	27
No. of Students(f)	7	11	16	10	6	2

File	Edit	View	Data	Transform	Analyze	Graphs	Utilities	Extensions	Window	Help
25 :										
	X	f	var	var	var	var	var	var	var	var
1	10	3								
2	14	5								
3	16	7								
4	18	6								
5	20	4								

Output of Given Data:

### Statistics

X

N	Valid	25
	Missing	0
Std. Deviation		3.000
Variance		9.000
Range		10

X

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	3	12.0	12.0	12.0
	14	5	20.0	20.0	32.0
	16	7	28.0	28.0	60.0
	18	6	24.0	24.0	84.0
	20	4	16.0	16.0	100.0
	Total	25	100.0	100.0	

## Calculating Correlation between Two Variable X and Y

Data:

X	12	15	18	21	24	27
Y	7	11	16	10	6	2

File	Edit	View	Data	Transform	Analyze	Graphs	Utilities	Extensions	Window	Help
14 :										
	X	Y	var	var	var	var	var	var	var	var
1	2	6								
2	4	8								
3	6	9								
4	8	10								
5	10	12								

Output of the Given Data:

### Correlations

		X	Y
X	Pearson Correlation	1	.990 <sup>**</sup>
	Sig. (2-tailed)		.001
	N	5	5
Y	Pearson Correlation	.990 <sup>**</sup>	1
	Sig. (2-tailed)	.001	
	N	5	5

<sup>\*\*</sup>. Correlation is significant at the 0.01 level (2-tailed).

## Calculating Regression Where X is depends upon Y

Data:

Marks Obtained(X)	12	15	18	21	24	27
No. of Students(f)	7	11	16	10	6	2

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help									
21:									
	X	Y	var	var	var	var	var	var	v
1	57	77							
2	58	78							
3	59	75							
4	59	78							
5	60	82							
6	61	82							
7	62	79							
8	64	81							

Output of Given Data:

### Variables Entered/Removed<sup>a</sup>

Model	Variables Entered	Variables Removed	Method
1	Y <sup>b</sup>	.	Enter

a. Dependent Variable: X

b. All requested variables entered.

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.603 <sup>a</sup>	.364	.258	1.954

a. Predictors: (Constant), Y

### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.091	1	13.091	3.429	.114 <sup>b</sup>
	Residual	22.909	6	3.818		
	Total	36.000	7			

a. Dependent Variable: X

b. Predictors: (Constant), Y

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.909	23.282		.726	.495
	Y	.545	.295	.603	1.852	.114

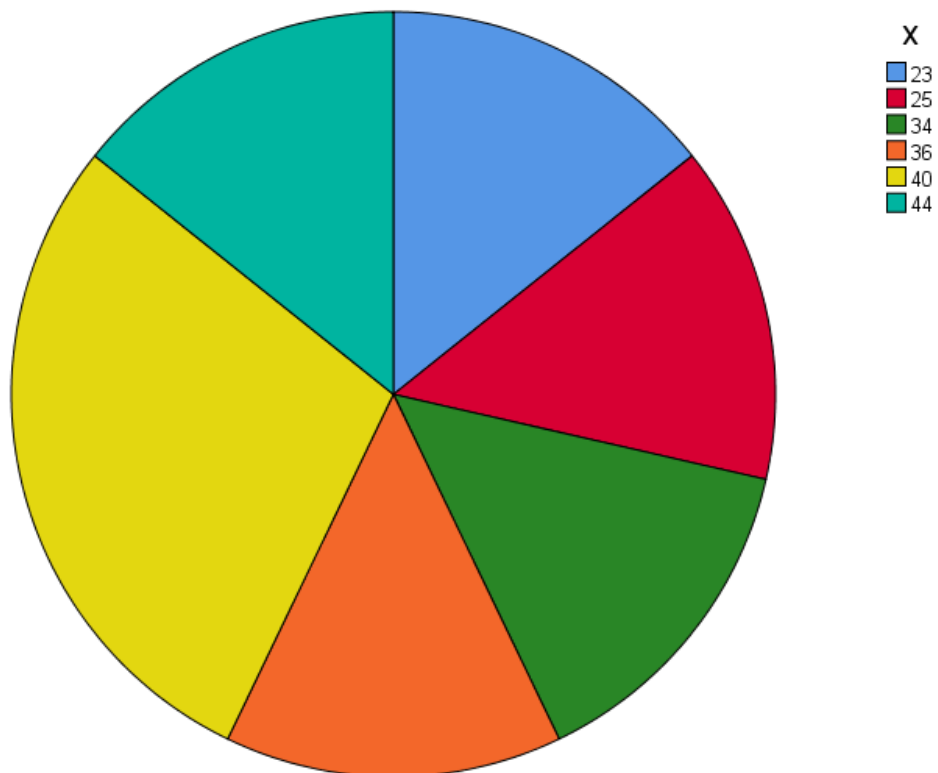
a. Dependent Variable: X

## Generating Different Types of Graphs

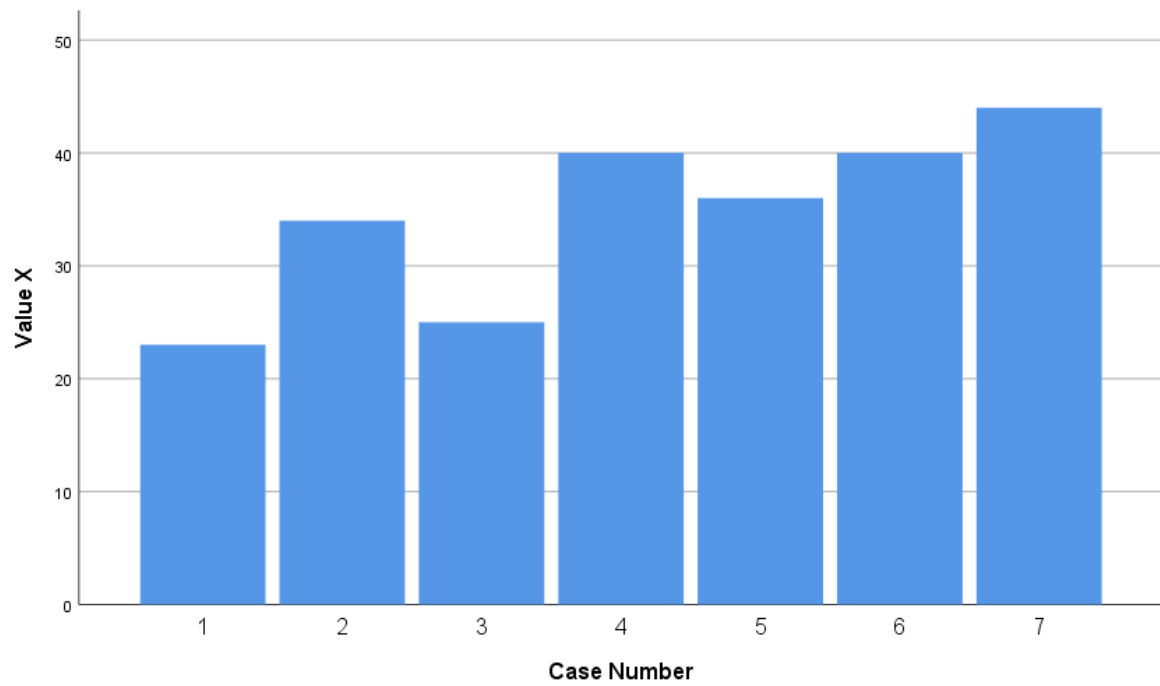
Data: 23, 34, 25, 40, 36, 40, 44

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help									
10 :									
	X	var	var	var	var	var	var	var	var
1	23								
2	34								
3	25								
4	40								
5	36								
6	40								
7	44								

Presenting in Pie Chart:



Presenting in Bar Chart:



Presenting in Line Chart:

