

2. Compute the mean, median, mode for the following frequency distribution

Height(cm)	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185
Frequency	4	6	28	58	64	30	5	5

Solution

Step1 : create three variable loheight,upheight and frequency in variable view. Change its type as numeric.

Step 2: in the data view enter the data as in the question

Step 3: click Transform-> compute variable

Then Target variable as midheight

Numeric Expression as $(loheight+upheight) / 2$

Click ok

loheight	upheight	frequency	midheight
145.00	150.00	4.00	147.50
150.00	155.00	6.00	152.50
155.00	160.00	28.00	157.50
160.00	165.00	58.00	162.50
165.00	170.00	64.00	167.50
170.00	175.00	30.00	172.50
175.00	180.00	5.00	177.50
180.00	185.00	5.00	182.50

Step 4: click on Data->Weight Cases->click on weight cases by->select and click frequency variable then ok

Step 5: click on Analyze->Descriptive Statistics->Frequency->select midheight as variable->click on the button Statistics->tick on mean ,median and mode click ok

Statistics

midheight		
N	Valid	200
	Missing	0
Mean		165.1750
Median		167.5000
Mode		167.50

3. The ages and incomes of the 10 employees in a company are given below. Compute the standard deviation of ages and incomes for these employees.

Age	25	28	34	51	47	39	55	40	37	41
Income	23500	26000	30000	42000	40000	35500	50000	37000	35750	38000

Solution:

Step1 : create two age and income in variable view. Change its type as numeric.

Step 2: in the data view enter the data as in the question

age	income
25.00	23500.00
28.00	26000.00
34.00	30000.00
51.00	42000.00
47.00	40000.00
39.00	35500.00
55.00	50000.00
40.00	37000.00
37.00	35750.00
41.00	38000.00

Step3: Step 5: click on Analyze->Descriptive Statistics->Frequency->select age and income variable->click on the button Statistics->tick on StandardDeviation

Statistics

		age	income
N	Valid	10	10
	Missing	0	0
Std. Deviation		9.48742	122942.921

4. A study assessing the effectiveness of iron supplements among 8 school students reveals the following data. Check whether the supplement is effective or not?

Hb level before	Hb level after
10	13
8	13
9	11
10	12
8	10
10	13
11	14
12	16

Solution:

Suppose H_0 =No significance difference between HB level before and after

Step1 : create variables HB_Before and HB_After in the create variable view. Change its type as numeric.

Step 2: in the data view enter the data as in the question

Step3. Click on analyze menu-> compare means->Paired Sample T test-> click on arrow and change the variables HB_Before and HB_After in the right column as variable1 and variable2 respectively-> then click OK button

OUTPUT

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 HB_Before	9.75	8	1.389	.491
HB_After	12.75	8	1.832	.648

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 HB_Before & HB_After	8	.814	.014

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 HB_Before - HB_After	-3.000	1.069	.378	-3.894	-2.106	-7.937	7	.000

From the output significant value is .000 . it is less than .05 . so we reject H_0 . This means there is significant difference between HB level before and after

One-way ANOVA

5. The data in the following table gives the number of hours of relief provided by 5 different brands of headache tablets administered to 25 subjects experiencing fevers of 38°C or more. Perform the analysis of variance and test the hypothesis at the 0.05 level of significance that the mean number of hours of relief provided by the tablets is same for all 5 brands

A	B	C	D	E
5	9	3	2	7
4	7	5	3	6
8	8	2	4	9
6	6	3	1	4
3	9	7	4	7

Solution:

Suppose H_0 = No significance difference between hours of relief for the tablet of different brands

Step 1: enter the variable time and brand in the variable view. Change its types to numeric. In brand variable change its label and value as given below

Value	label
1.0	A
2.0	B
3.0	C
4.0	D
5.0	E

Step 2: enter the data variable time and brand in the corresponding column

	time	brand	var
	5.00	1.00	
	4.00	1.00	
	8.00	1.00	
	6.00	1.00	
	3.00	1.00	
	9.00	2.00	
	7.00	2.00	
	8.00	2.00	
	6.00	2.00	
	9.00	2.00	
	3.00	3.00	
	5.00	3.00	
	2.00	3.00	
	3.00	3.00	
	7.00	3.00	
	2.00	4.00	
	3.00	4.00	
	4.00	4.00	
	1.00	4.00	
	4.00	4.00	
	7.00	5.00	

Step 3: click on Analyze tab->Compare means->One way Anova->select time in dependent list and brand in factor-> click ok

OUTPUT

ANOVA

time					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	79.440	4	19.860	6.896	.001
Within Groups	57.600	20	2.880		
Total	137.040	24			

Significant value is .001 which is less than .05 so H0 is rejected which mean there is a significant difference between between hours of relief for the tablet of different brands

6. Calculate Pearson's coefficient of correlation between advertisement cost (in thousands) and sales (in lakhs) as per the data given below:

Advt. cost	39	65	63	90	82	75	25	98	36	78
Sales	47	53	58	86	62	68	60	91	51	84

Solution:

Step 1: enter the variable advtcost and sales in the variable view. Change its types to numeric

Step 2: enter the data of advtcost and sales in the corresponding column

Step 3: click on Analyze tab->Correleate->Bivariate->select advtcost and sales and click arrow to become it on right side-> tick on pearson of correlation coefficients->then click on two tailed and click ok

	advtcost	sales	var	va
	39.00	47.00		
	65.00	53.00		
	63.00	58.00		
	90.00	86.00		
	82.00	62.00		
	75.00	68.00		
	25.00	60.00		
	98.00	91.00		
	36.00	51.00		
	78.00	84.00		

OUTPUT

→ *Correlations*

[DataSet0]

Correlations

		advtcost	sales
advtcost	Pearson Correlation	1	.778**
	Sig. (2-tailed)		.008
	N	10	10
sales	Pearson Correlation	.778**	1
	Sig. (2-tailed)	.008	
	N	10	10

** . Correlation is significant at the 0.01 level (2-tailed).