

Name : Ade Hikmat Pauji Ridwan

NPM : 22552011130

Class: TIF K 22KB

UTS: Statistika

1. 10 Students that have difference of time study tested by IPS test
Students : A B C D E F G H I J Time (X)
: 2 3 1 3 4 3 4 1 1 2 Score (Y) : 6 7 4 8 8 7 9 5 4 6 Is there correlation between time study and test score ?

data	x	y	x ²	y ²	xy
1	2	6	4	36	12
2	3	7	9	49	21
3	1	4	1	16	4
4	3	8	9	64	24
5	4	8	16	64	32
6	3	7	9	49	21
7	4	9	16	81	36
8	1	5	1	25	5
9	1	4	1	16	4
10	2	6	4	36	12
Total	24	64	70	436	171

$$r = \frac{n(\text{total } xy) - (\text{total } x)(\text{total } y)}{\sqrt{(n(\text{total } x^2) - (\text{total } x)^2)(n(\text{total } y^2) - (\text{total } y)^2)}}$$

$$r = 174 / 180,930926$$

$$r = 0,961692972$$

The very strong positive correlation (0.961692972) between study time and test scores indicates that more study time tends to increase test scores.

2. By referring to this following table

Age	Frequency	Total
20	5	100
21	7	147
22	13	286
23	4	92
24	6	144
25	7	175
26	7	182
27	5	135
28	3	84
29	4	116
30	15	450
31	3	93
33	3	99
35	1	35
Total	83	2138

a. State Mean, Median and Mode

Mean	number of data / lots of data $= 2138 / 83$ $= 25,75903614$
Median	lots of data / 2 + 1 $= 83 / 2$ $= 42$ 42nd data = 26 Median = 26
Mode	30

b. Make Distribution of Frequency table

Range	largest value - smallest value $= 35 - 20$ $= 15$
many classes	$= 1 + 3.3 \log 83$ $= 7$
class length	range / number of classes $= 15 / 7$ $= 2,142857143$

Age	Frequency
20 - 21	12
22 - 23	17
24 - 25	13
26 - 27	12
28 - 29	7
30 - 31	18
33 - 35	4
Total	83

c. Calculate Variance

Variance						
Age	Frequency	xi	fi.xi	xi-x	(xi-x)^2	fi.(xi-x)^2
20 - 21	12	20,5	246	-5,259036145	27,65746117	331,8895
22 - 23	17	22,5	382,5	-3,259036145	10,62131659	180,5624
24 - 25	13	24,5	318,5	-1,259036145	1,585172013	20,60724
26 - 27	12	26,5	318	0,740963855	0,549027435	6,588329
28 - 29	7	28,5	199,5	2,740963855	7,512882857	52,59018
30 - 31	18	30,5	549	4,740963855	22,47673828	404,5813
33 - 35	4	34	136	8,240963855	67,91348527	271,6539
total	83		2149,5			1268,473

$$S^2 = \frac{\sum f_i(x_i - \bar{x})^2}{n} = 15,28280592$$

so the number of variants is 15,28280592