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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 = n(total xy) - (total x)(total y) / akar (n(total x^2)-(total x \* total x)))(n(total y^2)-(total y \* total y)))

|  |
| --- |
| 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 |

1. 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 |

1. 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 |

1. 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 = fi.(xi-x)^2 / n = | | | 15,28280592 | | |

so the number of variants is 15,28280592