

Statistics

Lecture 8



Feb 19-8:47 AM

Complete the chart below:

class	limits	class MP	class F
32	-36	34	5
37	-41	39	8
42	-46	44	12
47	-51	49	5

find \bar{x} & S^2

clear all lists
class MP \rightarrow L1, class F \rightarrow L2

STAT \rightarrow CALC
1: 1-Var Stats

with Menu
List: L1
Freq List: L2
CALC date
 $\bar{x} = 41.8\bar{3}$
 $S = 4.857$
 $n = 30$

NO MENU
L1, L2
Enter

find S^2
in reduced
fraction
 $S^2 = 23.59\dots$

$$S^2 = \frac{4105}{174}$$

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Consider the stem plot below

6	2 5 8
7	0 2 5 5 9
8	0 3 6 6 6 8
9	2 3 5 7 8 8 9 9
10	0 0

1) $n = 24$

2) Range = $100 - 62 = 38$

3) Estimate $S \approx \frac{\text{Range}}{4}$
 $= \frac{38}{4} = \boxed{9.5}$

4) P_{30}

$L = \frac{30}{100} \cdot 24 = 7.2$ $L=8$

$P_{30} = 8^{\text{th}}$
 element
 $= \boxed{79}$

5) P_{50}

$L = \frac{50}{100} \cdot 24 = 12$

$P_{50} = \frac{12^{\text{th}} + 13^{\text{th}}}{2}$
 $= \frac{86 + 86}{2} = \boxed{86}$

6) Find k such that

$P_k = 75$. Below $k = \frac{B}{n} \cdot 100 = \frac{5}{24} \cdot 100$
 $= 20.8 \dots \rightarrow \boxed{21}$

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x	y	x^2	y^2	xy
5	8	25	64	40
6	10	36	100	60
6	8	36	64	48
8	12	64	144	96

$\sum x = 25$

$\sum x^2 = 161$

$\sum y = 38$

$\sum y^2 = 372$

$\sum xy = 244$

clear all lists

$x \rightarrow L1, y \rightarrow L2$

STAT \Rightarrow **CALC**

2: 2-Var Stats

$n=4$

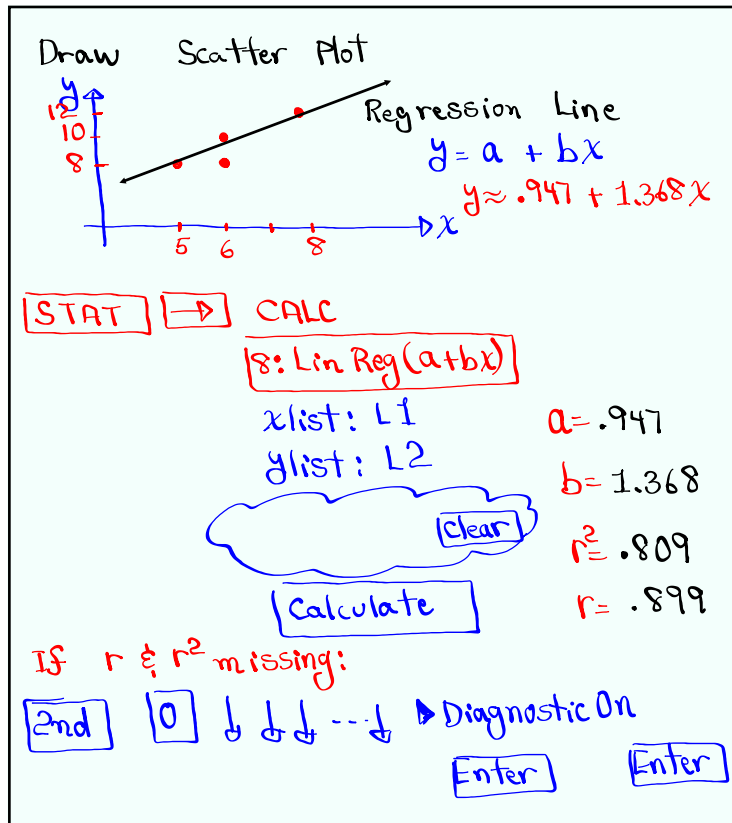
x list : L1

y list : L2

freq list: **clear**

calculate

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r → Linear Correlation Coefficient
 $-1 \leq r \leq 1$

when r is close to ± 1 ,
 Linear Correlation is Significant

when r is close to 0,
 Linear Correlation is not Significant.

from last example
 $r = .899 \rightarrow$ close to 1 \rightarrow Significant

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$r^2 \rightarrow$ Coefficient of determination
 Always round to whole%
 It tells us what % of y -Values
 are explained by x -Values.
 From last example $r^2 \approx 81\%$
 81% of y -Values are
 explained by x -Values.

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QZ Scores	Exam Scores
8	85
6	72
9	90
10	95
7	75

$QZ \rightarrow x \rightarrow L1$
 $Exam \rightarrow y \rightarrow L2$
 Lin Reg ($a + bx$)
 with $L1 \& L2$

$y \approx 35 + 6x$
 $a = 34.6 \approx 35$
 $b = 6.1 \approx 6$
 $r^2 \approx 98\%$
 $r^2 = .976$
 $r = .988$

98% of exam Scores
 are explained by QZ
 Scores.

r is close to 1 Linear Correlation
 is significant.

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