

Statistics

Lecture 4



Feb 19-8:47 AM

How to use Your TI Calculator

- 1) To clear the Screen Clear
- 2) To quit 2nd MODE
- 3) To clear all lists
2nd + 4:Clear All lists Enter
- 4) To Reset all lists
STAT Edit Enter
5:Setup Editor

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How to Store Data in a list:

Consider the Sample below

15 12 8 20 16
10 15 18 19 14

quit & clear Screen

2nd **MODE** **clear**

STAT **Edit**

1:Edit

L1
15 **enter**
12 "
8 "
:
14 **enter**

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How to view a list:

To view L1

2nd **1** **Enter**
L1

{15 12 8 20 - - - 14}
→ → →
← ← ←

To Sort a list:

STAT **Edit** **2nd** **1** **Enter**
2:SortA(L1

Let's view L1 again

2nd **1** **Enter**
L1

{8 10 12 14 - - - 20}
→ → →
← ← ←

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How to find $\bar{x}$ & S :

STAT $\rightarrow$ **CALC**

1:1-Var Stats

with Menu

List: L1

FreqList: **clear**

Calculate

2nd **1**

No Menu
1-Var Stats
L1
Enter

Min = 8

$Q_1 = 12$

Med = 15

$Q_3 = 18$

Max = 20

5-Number Summary $\bar{x} = 14.7$

$S = S_x = 3.860$

$n = 10$

$\downarrow$

$\downarrow$

$\downarrow$

$\downarrow$

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How to find S^2 :

VARS **5: Statistics** **3: S_x** **x^2** **Enter**

$$S^2 = 14.9$$

to convert to a reduced fraction

MATH **1: $\rightarrow$ Frac** **Enter**

$$S^2 = \frac{149}{10}$$

Clear all lists

2nd **+** **4: clear All Lists** **Enter**

Clear the Screen **clear**

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I randomly Selected 20 Voters, here are their ages:

Store in L1

42 36 25 20 50
28 30 32 40 60
24 21 38 65 62
58 70 55 62 20

STAT Edit

1:Edit

L1

42 Enter
36 "
25 "
20 "

Let's quit & clear Screen

2nd **MODE** **clear**

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Sort L1, view **L1**, Make Stem Plot

STAT Edit **2nd** **1** **Enter**

2:SortA()

2nd **1** **Enter**

{20 20 21 24

→ → →

2 | 001458
3 | 0268
4 | 02
5 | 058
6 | 0225
7 | 0

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Find $\bar{x}$ & S **STAT** **→** **CALC****1:1-Var Stats**

With Menu

List: L1

Freq List: **Clear****Calculate****2nd** **1**

No Menu

1-Var Stats

L1

Enter

Min = 20

Q₁ = 26.5

Med. = 39

Q₃ = 59

Max = 70

 $\bar{x} = 41.9$ $S = S_x = 16.927$ $n = 20$

↓

↓

↓

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Find S^2 in reduced fraction**VAR** **5: Statistics** **3: S_x** **χ^2** **MATH** **1: Frac****Enter**

$$S^2 = \frac{27219}{95}$$

clear all lists **2nd** **+** **4: clear All lists****Enter**clear the Screen **Clear**

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2 | 001458
3 | 0268
4 | 02
5 | 058
6 | 0225
7 | 0

$n=20$

Find P_{20}

$L = \frac{20}{100} \cdot 20 = 4$

$\frac{20\%}{24.5} \quad \frac{80\%}{}$

$P_{20} = \frac{4\text{th element} + \text{Next one}}{2}$

$= \frac{24+25}{2} = \boxed{24.5}$

Find P_{52}

$L = \frac{52}{100} \cdot 20 = 10.4$

$L=11$

$P_{52} = 11\text{th element}$

$= 40$

$\frac{52\%}{40} \quad \frac{48\%}{}$

Find K Such that $P_K = 50$

$K = \frac{B}{n} \cdot 100 = \frac{12}{20} \cdot 100 = 60$

Round to whole %

$P_{60} = 50$

$\frac{60\%}{50} \quad \frac{40\%}{}$

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working with grouped data

Freq. table

class MP	class F
10	3
18	12
26	5

1) 3 classes
2) class width 8
3) $n = \sum f = 20$

How to find $\bar{x}$ & s

class MP $\rightarrow L1$
class F $\rightarrow L2$

(STAT) $\rightarrow$ CALC
1: 1-Var Stats

With Menu
List: L1
FreqList: L2
[Calculate]

No Menu
1-Var Stats
L1, L2
[Enter]

[2nd] [2]

$\bar{x} = 18.8$
 $S = Sx = 5.126$
 $n = 20$

$S^2 = \frac{2496}{95}$

(VARS) [5: Statistics] [3: Sx] [x²] [Math] [1: Divid] [Enter]

Clear All lists [2nd] [1: Clear All lists] [Enter]
clear the Screen

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Complete the chart below

class limits	class MP	class F	Cum. F	
17 - 25	21	4	4	1) 4 classes
26 - 34	30	6	10	2) CW = 9
35 - 43	39	10	20	3) n = 25
44 - 52	48	5	25	

class MP $\rightarrow$ L1, class F $\rightarrow$ L2

STAT $\rightarrow$ **CALC**

1:1-Var Stats

$\bar{x} = 35.76$
 $S = S_x = 8.955$
 $n = 25$

$S^2 = \frac{8019}{100}$

with Menu
 List: L1
 FreqList: L2
Calculate

No Menu
 L1, L2
Enter

VARS
5: Statistics
3: Sx
 x^2

Math
1: $\rightarrow$ frac
Enter

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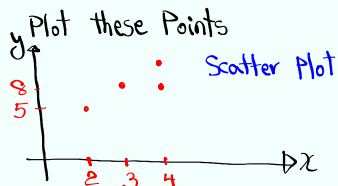
working with ordered-pairs

(x, y)

$(2, 5), (3, 8), (4, 10), (4, 8)$

x	y
2	5
3	8
4	10
4	8

L1 { } L2 { }



clear all lists

$x \rightarrow$ L1

$y \rightarrow$ L2

$\sum x = 13$

$\sum x^2 = 45$

$n = 4$

$\sum y = 31$

$\sum y^2 = 253$

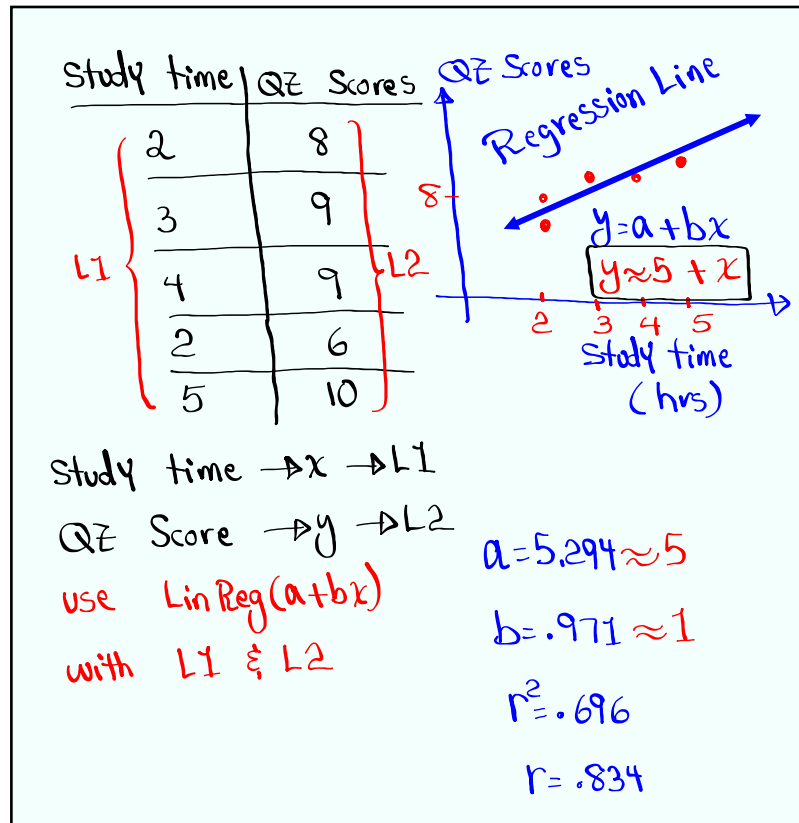
$\sum xy = 106$

STAT $\rightarrow$ **CALC**

2:2-Var Stats

with Menu No Menu
 xlist: L1 L1, L2
 ylist: L2
 FreqList: **clear** **Enter**
Calculate

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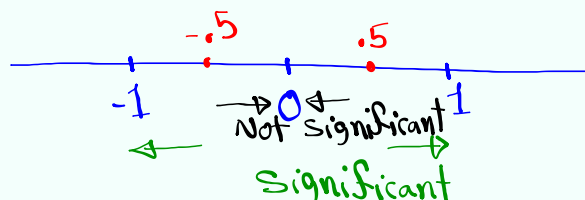
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r linear Correlation Coefficient

$$-1 \leq r \leq 1$$

when r is close to 1 or -1,
the linear Correlation is Significant.

when r is close to 0,
the linear Correlation is not Significant.



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r^2 (Always in whole %) Coef. of determination

r^2 tells us what % of y -values are explained by x -values.

From Last example

$$r^2 = .696 \rightarrow r^2 \approx 70\%$$

70% of QZ Scores are explained by study time.

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