Statistics

Lecture 14

Feb 19-8:47 AM

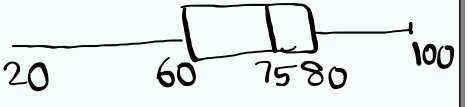
Class Quiz 5

Consider the Following

5-Number Summary

20	60	75	80	100

1) Draw Box Plot



2) $IQR = Q_3 - Q_1$

$= 80 - 60 = \boxed{20}$

3) Upper Fence

$Q_3 + 1.5(IQR)$

$= 80 + 1.5(20) = \boxed{110}$

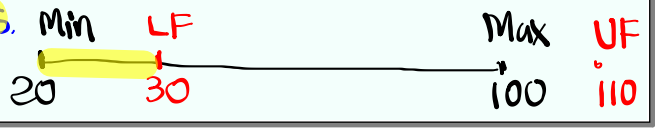
4) Lower Fence

$Q_1 - 1.5(IQR)$

$= 60 - 1.5(20) = \boxed{30}$

5) Discuss outliers.

20 to 30



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Consider the chart below

x	y
2	5
3	8
3	10
4	10
5	12

$x \to L1$, $y \to L2$

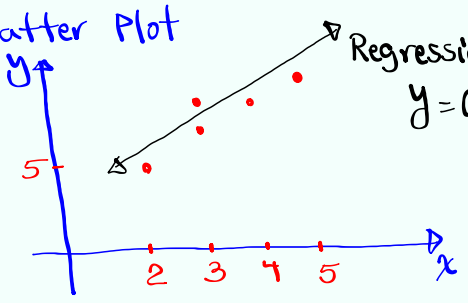
Use [2-Var Stats] with L1 & L2

$\sum x = 17$ $\quad \sum y = 45$

$\sum x^2 = 63$ $\quad \sum y^2 = 433$

$n = 5$ $\quad \sum xy = 164$

Scatter Plot



Regression Line

$y = a + bx$

Sep 18-9:05 AM

How to find $y = a + bx$

STAT → CALC

8: LinReg(a+bx)

With Menu

x list: L1

y list: L2

Clear

Calculate

No Menu

L1, L2 Enter

7

If r & r^2 are missing,

2nd 0 ↓ ↓ ↓ ··· ↓

▶ Diagnostic On Enter Enter

$a = 1.808$

$b = 2.115$

$r^2 = .831$

$r = .912$

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Consider the chart below

Study time	Quiz Score
2	8
3	9
1	5
4	10
4	8

Study time → x → L1

Quiz Score → y → L2

Use 2-Var Stats with L1 & L2

$\Sigma x = 14$ $\Sigma y = 40$

$\Sigma x^2 = 46$ $\Sigma y^2 = 334$

$n = 5$ $\Sigma xy = 120$

Use LinReg(a+bx) with L1 & L2

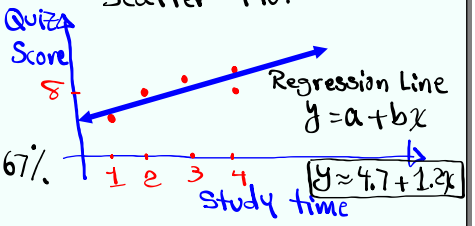
$a = 4.706$

$b = 1.176$

$r^2 = .672 \approx 67\%$

$r = .820$

Scatter Plot



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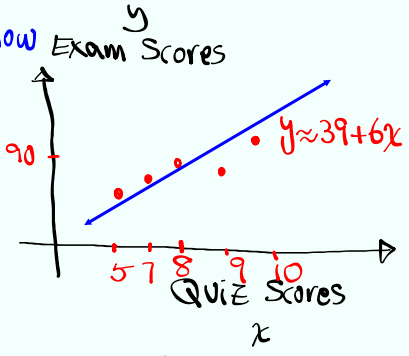
Consider the chart below

Quiz Score	Exam Score
8	90
5	65
10	95
7	80
9	85

QZ Scores → x → L1

Exam Scores → y → L2



Use LinReg(a+bx) with L1 & L2

$a = 39.257 \approx 39$

$b = 5.608 \approx 6$

$r^2 = .878 \approx 88\%$

$r = .937$ (close to 1)

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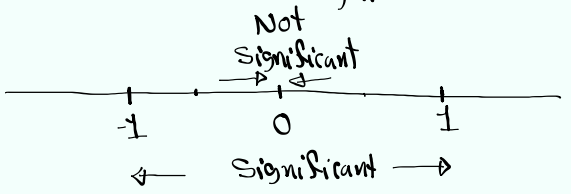
what is r? what does it say about our sample of ordered-pairs?

r is Linear Correlation Coefficient

$-1 \leq r \leq 1$

If r is close to 1 or -1, Linear Correlation is Significant.

If r is close to 0, Linear Correlation is not Significant



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what about r^2? what does it say to us?

r^2 is the Coefficient of determination

Always Round to whole %

r^2 tells us what % of Y-values are explained by X-values.

Last example

88% of exam Scores were explained by Quiz Scores.

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