07/16/2019

$$\text{Percentile of } x = \frac{\text{Number of values less than } x}{\text{total}} \times 100$$

put your list in order first!

$$\text{Percentile of } 70 = \frac{11}{18} \times 100 = 61.1\%$$

always round up

percentile of 70 is 62% & 38% made above 70.

$$L = \text{Locate} = \frac{k}{100} \times n$$

Ex4. Location/Position of P_{30}?

① ② ③ ④ 99

$$L = \frac{30}{100} \times 18$$

$$L = 6$$

The score for P_{30} is 36.

5 number summary points: min Q_1 Q_2 Q_3 max.

25% | median 50% | 75%

Q_1: median of the lower half

Q_3: Median of the upper half.

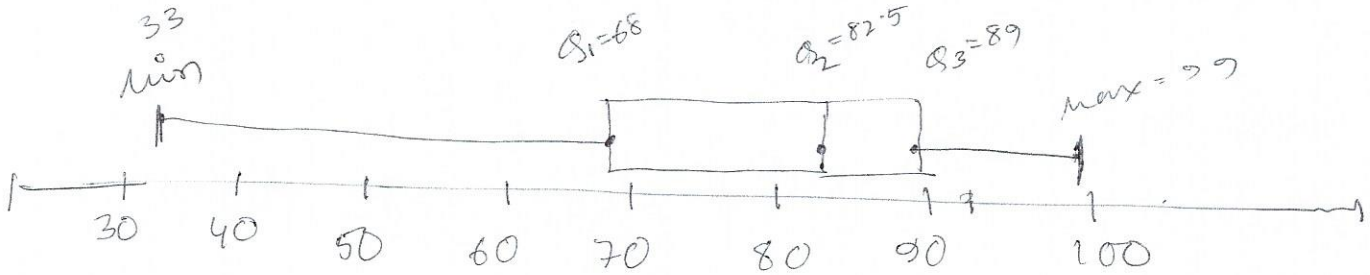
Min = 33

$Q_1 = 68$

$Q_2 = 82.5$

$Q_3 = 89$

Max = 99



skewed to the left.

→ Interquantile range.

$IQR = Q_3 - Q_1$

lower Fence $= Q_1 - 1.5\,IQR = 68 - 1.5 \times 21 = 36.5$

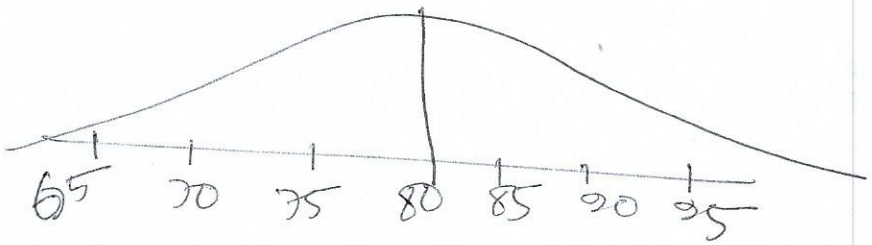
Upper Fence $= Q_3 + 1.5\,IQR = 89 + 1.5 \times 21 = 120.5$

Anything between lower fence & upper fence is Usual.

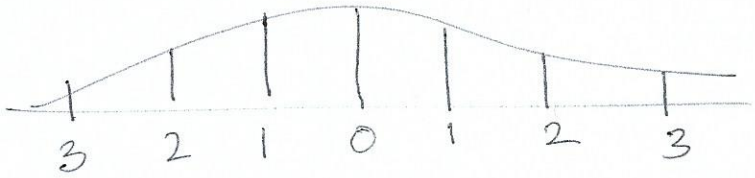
Outside of this is unusual.

which is called outliers.

Outlier = unusual (mark "*") on a box plot.



$\frac{80-80}{5} = 0$ $\qquad$ $\frac{85-80}{5} = 1$



$z = \frac{87-80}{5} \approx 1.4$

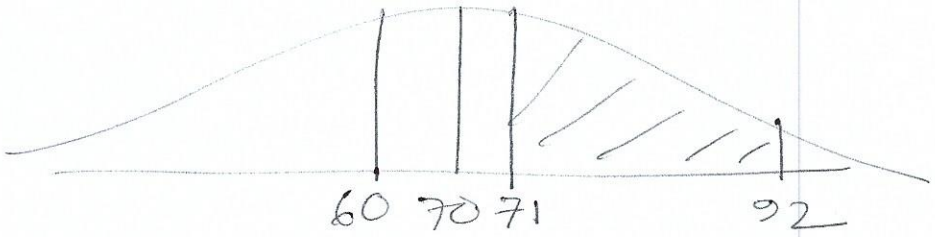
$z = \frac{x-\mu}{\sigma}$ pop'n

$z = \frac{x-\bar{x}}{s_x}$ sample

Ex 8

$\mu = 70$

$\sigma = 8$



$z = \frac{70-60}{8} = \frac{10}{8}$

$z = \frac{70-71}{8} = \frac{1}{8}$

$z = \frac{70-92}{8} = \frac{22}{8}$

$$z = \frac{x-\mu}{\sigma}$$

$$z = \frac{60-70}{8} = \frac{-10}{8} = -1{,}25$$

$$z = \frac{71-70}{8} = \frac{1}{8} \approx 0{,}125$$

$$z = \frac{92-76}{8} = \frac{12}{8} = 2{,}75$$

3x9

a)

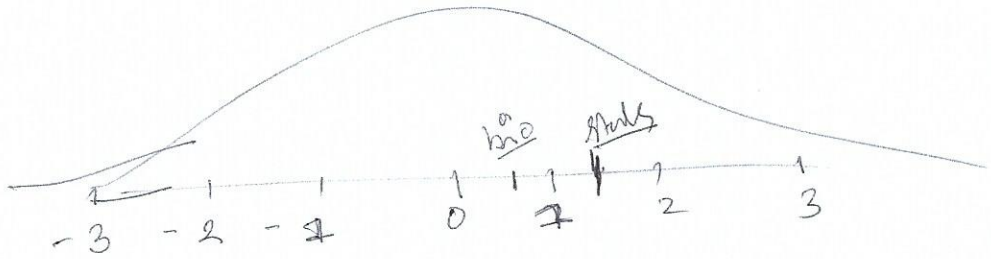
$$z_{\text{matka}} = \frac{73-63}{7} \approx 1{,}43$$

bio $x = 26$

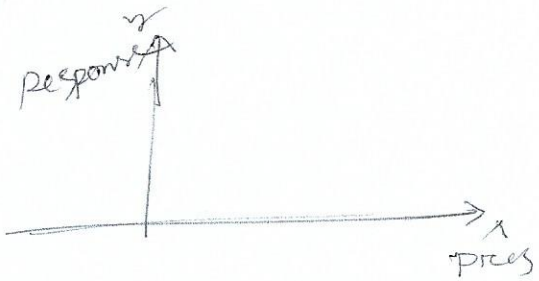
$\mu = 23$

$\sigma = 3{,}9$

$$z_{\text{bio}} = \frac{26-23}{3{,}9} \approx 0{,}77$$



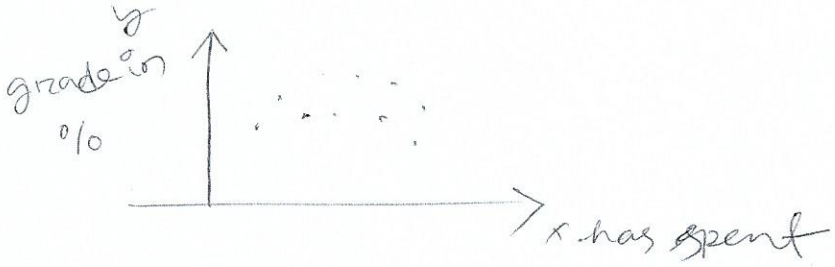
4.1



The predictor variable = x

The response variable = y

hours spent studying
for the test grade in %.



linear regression

positive correlation $r+$ $x\uparrow y\uparrow$ or $x\downarrow y\downarrow$

negative " $r-$ $x\uparrow y\downarrow$ or $x\downarrow y\uparrow$.

linear correlation coefficient or pearson product

$$r = \frac{\sum\left(\frac{x-\bar{x}}{s_x}\right)\left(\frac{y-\bar{y}}{s_y}\right)}{n-1}.$$

n = sample size

x = x-value

$\bar{x}$ = mean of xs

s_x = std dev of x_s

y = y-value

$\bar{y}$ = mean of y_s

s_x = std dev of y_s.

a) $r = -0.9831$

b) $r = 0.9800$

c) $r = -0.9000$

d) $r = 0.9830$

e) $r = .9777$

which r shows the strongest relation?

(a)