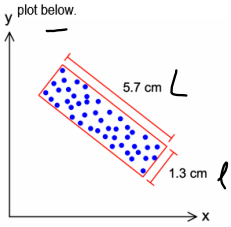
Estimate the *Linear Correlation Coefficient* for the scatter plot below.



$r = \pm\left(1 - \frac{l}{L}\right)$

$= -1 - \left(\frac{1.3}{5.7}\right)$

$= 1 - 0.228$

$= -0.772$

Given the following list of linear correlation coefficients, determine which one would indicate the **strongest** correlation.

-0.94, 0.32, 0.81, -0.76, -0.88, 0.93

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LINES OF BEST FIT

REGRESSION LINE

A line that best represents the set of points in a scatter plot. It allows you to predict the value of "y" for a given "x".

*****remember: y= ax +b******

Steps:

1. Draw a line through the majority of the points.
2. Use two points ON THE LINE to find the equation of the line. (y = ax+ b) Find slope, then solve for b.
3. Solve for x or y.

$y = -1x + 6.5$

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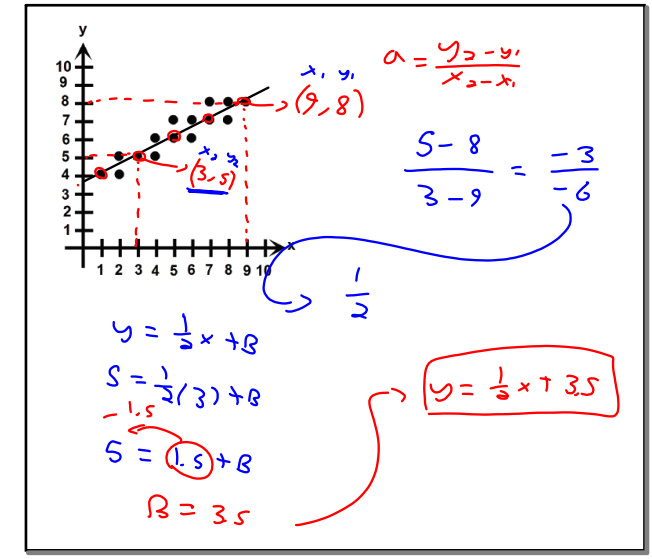

$a = \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{5-8}{3-9} = \frac{-3}{-6}$

$\frac{1}{2}$

$y = \frac{1}{2}x + B$

$5 = \frac{1}{2}(3) + B$

-1.5

$5 = 1.5 + B$

$B = 3.5$

$y = \frac{1}{2}x + 3.5$

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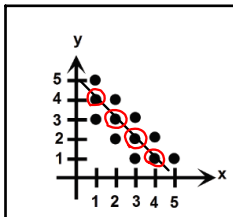

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MAYER LINE

Can be used for a scatter plot or a table of values:

Steps:

1. *Separate the table of values into two groups with the SAME number of points.*
2. *Calculate the average of the "x" coordinates and the "y" coordinates and determine the average "point" (x,y)*
3. *The Mayer line is the line that passes through these points.*

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x	40	45	50	55	60	65	70	75	80	85
y	2.80	3.30	3.75	4.20	5.05	6.10	6.60	7.20	7.80	8.60
x	90	95	100	105	110	115	120	125	130	135
y	9.20	9.95	10.60	11.05	11.85	12.90	13.30	13.60	14.00	14.50

Group 1

Group 2

$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{12.1 - 5.5}{112.5 - 62.5} = 0.132$

$x_1 = 62.5$ $y_1 = 5.5$

$x_2 = 112.5$ $y_2 = 12.1$

$y = ax + B$

$9.20 = (0.132)(55) + B$

$4.2 = 7.26 + B$

$B = -3.06$

$y = 0.132x - 3.06$

Steps:

Get average of 'X' of group 1

Get average of 'Y' of group 1

Get average of 'X' of group 2

Get average of 'Y' of group 2

Now, find the slope and than equation of a line

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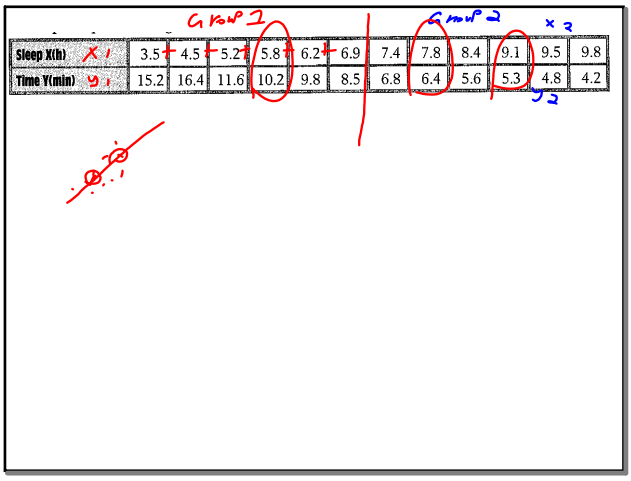
Group 1
Group 2
x 2
Sleep X(h) x1 3.5 4.5 5.2 5.8 6.2 6.9 7.4 7.8 8.4 9.1 9.5 9.8
Time Y(min) y1 15.2 16.4 11.6 10.2 9.8 8.5 6.8 6.4 5.6 5.3 4.8 4.2
y2

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