Algebra 1 4.6

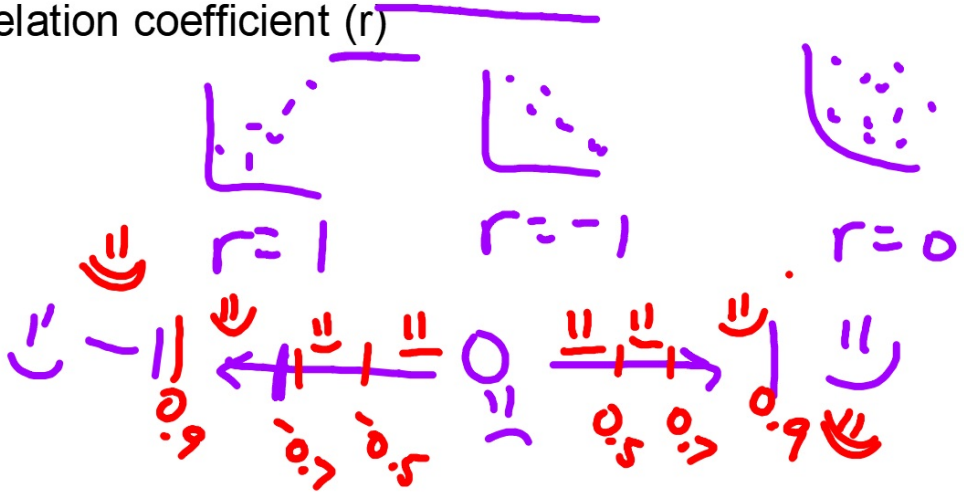
Write equations of best-fit lines using linear regression (graphing calculators)

best-fit line

linear regression equation

~~median-fit line~~ (use linear regression instead)

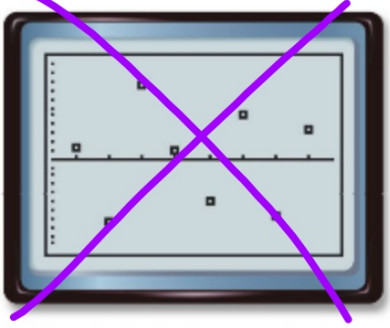
correlation coefficient (r)



Disregard residual

Real-World Example 2 Graph and Analyze a Residual Plot

HOCKEY Graph and analyze the residual plot for the data for Guided Practice 1A. Determine if the best-fit line models the data well.



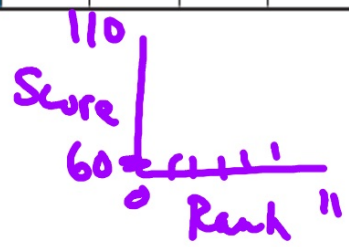
[0, 8] scl: 1 by [−10, 10] scl: 2

We need an equation before we can answer the question!

Real-World Example 3 Use Interpolation and Extrapolation

PAINTBALL The table shows the points received by the top ten paintball teams at a tournament. Estimate how many points the 20th-ranked team received.

L_1	Rank	1	2	3	4	5	6	7	8	9	10
L_2	Score	100	89	96	99	97	98	78	70	64	80



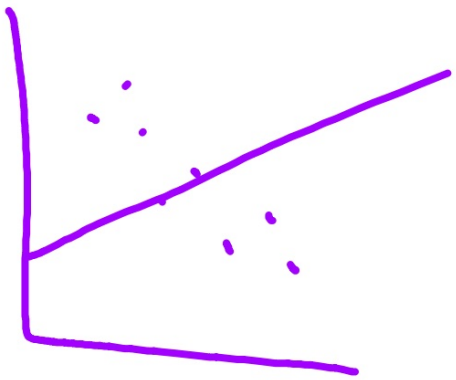
$y = ax + B$

$y = -3.32x + 105.33$

$r = -0.76$

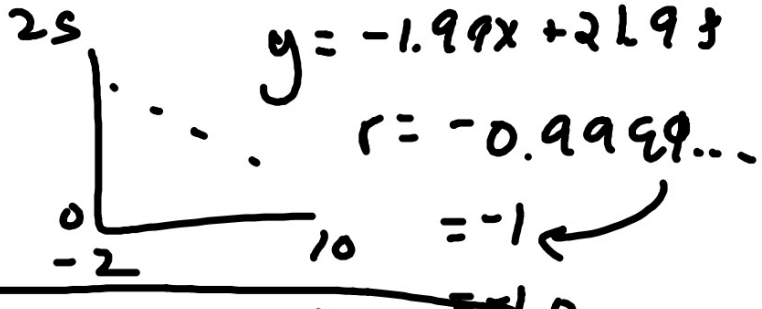
Score $= -3.32(\text{rank}) + 105.33$

≈ 39 (rank = 20)



	L1 Year	L2 # St. per computer
0	~~1996~~	22
2	~~1998~~	18
4	~~2000~~	14
6	~~2002~~	10
8	~~2004~~	6.1

year since 1996



$y = -1.99x + 21.9$

$r = -0.9999\ldots$

$= -1$

St./comp = -1.99 (year) + 21.9

Linear regression (line of fit) instead

linreg

Example 4 Median-Fit Line

PAINTBALL Find and graph the equation of a median-fit line for the data in Example 3. Then predict the score of the 15th ranked team.