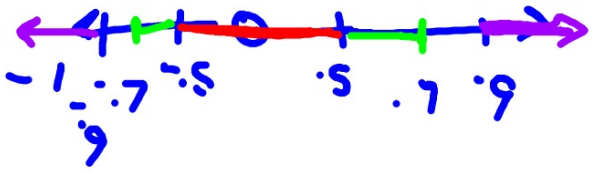
Algebra 1 4.6

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

Instructions are technical but not difficult:
take good notes, also see p. 255

best-fit line eyeball, by hand
linear regression equation calc app
~~median-fit line~~ (meh)
correlation coefficient (r)

0-.5 =
.5-.7 decent
0.7-.9 :)
↑.9 VG



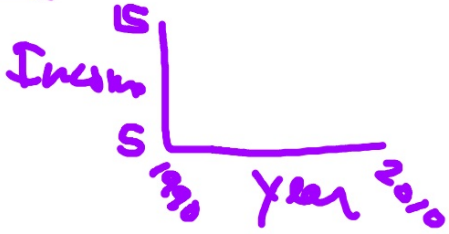
Ye~~ar since 2000~~

Real-World Example 1 Best-Fit Line

MOVIES The table shows the amount of money made by movies in the United States. Use a graphing calculator to write an equation for the best-fit line for that data.

Year (L_1)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Income ($ billion) (L_2)	7.48	8.13	9.19	9.35	9.27	8.95	9.25	9.65	9.85	10.21

X
Y



$y = mx + B$

$y = 0.232x - 456.082$

$r = 0.876$

correlation

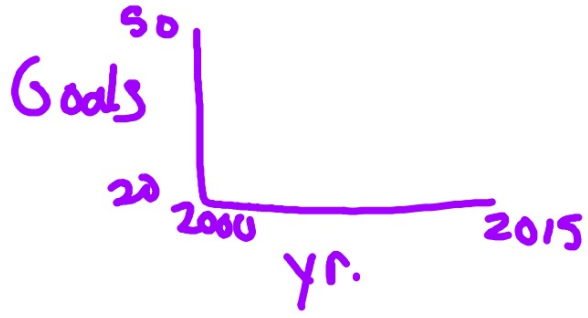
GuidedPractice

Write an equation of the best-fit line for the data in each table. Name the correlation coefficient. Round to the nearest ten-thousandth. ~~Let x be the number of years since 2003.~~

1A. HOCKEY The table shows the number of goals of leading scorers for the Mustang Girls Hockey Team.

	Year	2003	2004	2005	2006	2007	2008	2009	2010
L_2	Goals	30	23	41	35	31	43	33	45

L_1



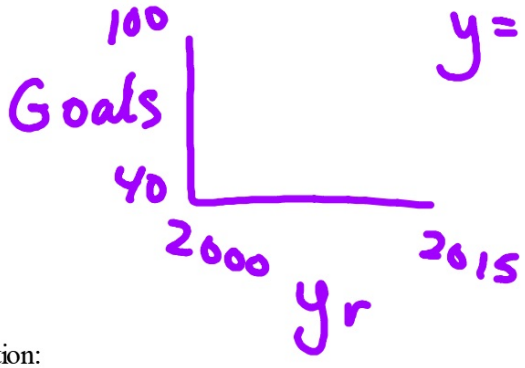
$y = mx + B$

$y = 1.869x - 3715.119$

$r = 0.614$

1B. HOCKEY The table gives the number of goals scored by the team each season.

L1	Year	2003	2004	2005	2006	2007	2008	2009	2010
L2	Goals	63	44	55	63	81	85	93	84



$y = 5.952x - 11872.45$

$r = 0.849$

correlation:

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

25
39

$y = -3.315x + 105.333$
$r = 0.761$

Write the equation (calculator)
Answer the question

Disregard median-fit, use 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.

Another type of calculation, gives almost same answer as linear regression.
Disregard median-fit instructions and do linear regression instead.