

Algebra 2 2.5

Use scatter plots and prediction equations

Use lines of regression* to model data

bivariate data (x, y)

scatter plot

correlation (positive, negative, none)

line of fit $\rightarrow$ by hand

prediction equation

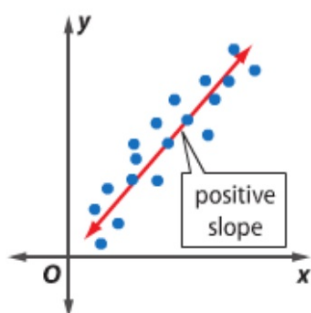
regression equation calculator,

correlation coefficient r (gr. calc)

graphing calculators/computer & scatter plots

KeyConcept Scatter Plots

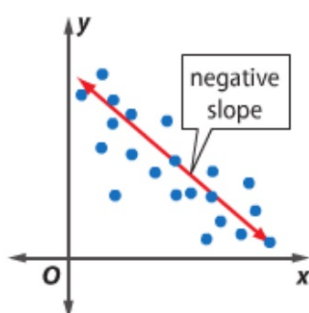
positive correlation



Strong Positive Correlation

The slope of the line is positive and the points are close to the line.

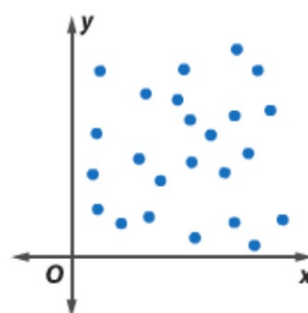
negative correlation



Weak Negative Correlation

The slope of the line is negative and the points are not close to the line.

no correlation



No Relative Correlation

There is no obvious pattern of increase or decrease for the given data.

Graphing calculator (on computer...might need a consult from Ms. Kruse)

2 Lines of Regression Another method for writing a line of fit is to use a line of regression. A **regression line** is determined through complex calculations to ensure that the distance of all data points to the line of fit are at a minimum. Most graphing calculators and spreadsheets can perform these calculations easily.

The **correlation coefficient** r , $-1 \leq r \leq 1$, is a measure that shows how well data are modeled by a linear equation.

- When r is close to -1 , the data have a negative correlation.
- When $r = 0$, the data have no correlation.
- When r is close to 1 , the data have a positive correlation.



APP: The only way to get a number for correlation!

Basic calculator operation:

Turn on & check settings

Contrast adjustments

Mode key

y=

Statplots

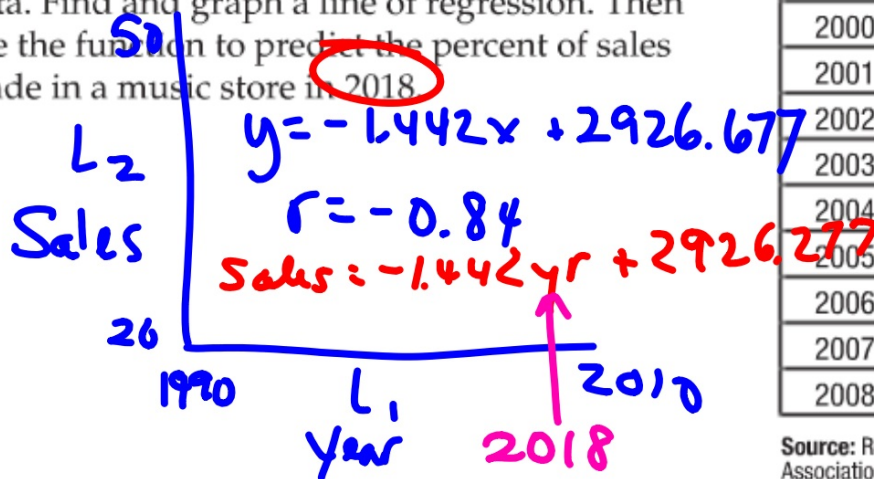
Clear screen

Lists

Also Alg 1

Guided Practice

2. **MUSIC** The table at the right shows the percent of sales that were made in music stores in the United States for the period 1999–2008. Use a graphing calculator to make a scatter plot of the data. Find and graph a line of regression. Then use the function to predict the percent of sales made in a music store in 2018.



Music Store Sales	
L_1 Year	L_2 Sales (percent)
1999	44.5
2000	42.4
2001	42.5
2002	36.8
2003	33.2
2004	32.5
2005	39.4
2006	35.4
2007	31.1
2008	30.0

Source: Recording Industry Association of America

WB 2.5 sk + pr.

Cricket data: official answers

σ = correlation

