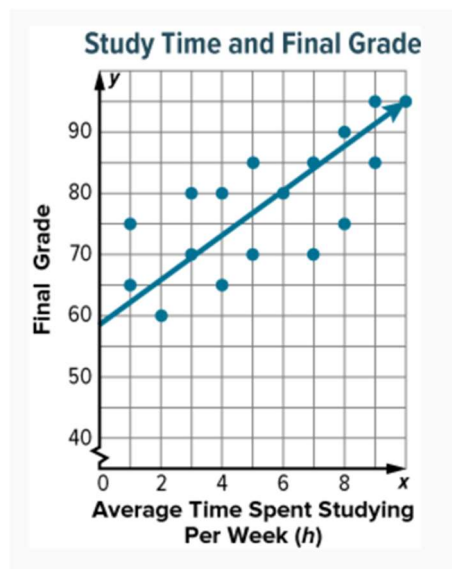


Warm Up:

1. Predict the final grade of a student who spends an average of 2 hours a week studying.
2. Predict the final grade of a student who spends an average of 6 hours per week studying.
3. Predict the final grade of a student who spends an average of 10 hours per week studying.
4. Does the graph show a positive, negative, or no correlation? What does that mean in context?



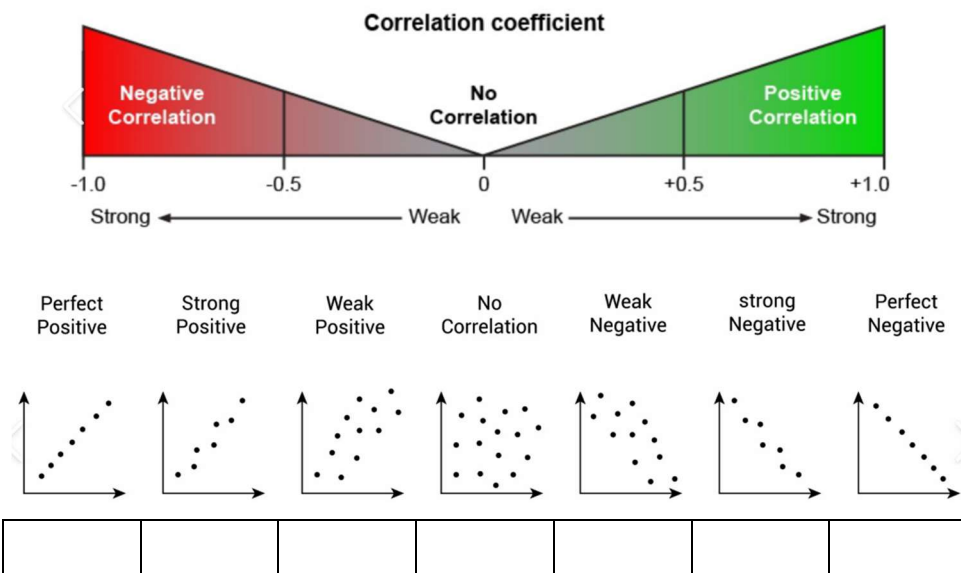
Speak Like A Mathematician

best fit line: the line that most closely _____ the data in the _____ plot.

linear regression: an _____ used to find the most _____ line of best fit.

correlation coefficient: a measure that shows how _____ data are modeled by a _____.

KEY CONCEPT: Correlation Coefficient



Example 1: Find a Line of Best-Fit

- a) On April 15, 1947, Jackie Robinson became the first Black man to play in Major League Baseball. He played in the major leagues for 10 years before retiring. The table shows Jackie Robinson's total hits during each season of his major league career. Use a calculator to write an equation for the best-fit line for the data. Then find and interpret the correlation coefficient.

Year	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Total Hits	175	170	203	140	185	157	159	120	81	98

- b) The table shows the number of international tourists that arrived in Europe from 2005 to 2014. Let x be the number of years since 2005. Use a calculator to write an equation for the best-fit line for the data. Then find and interpret the correlation coefficient.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
International Tourists (millions)	453	463.9	485.4	487.6	461.7	488.9	516.1	534.4	566.4	581.8

Example 2: Use a Line of Best-Fit

The Monday after Thanksgiving, or Cyber Monday, has become one of the biggest days for online sales. The table shows U.S. desktop online sales on Cyber Monday since 2009. Estimate the Cyber Monday sales in 2025. Calculate and interpret the correlation coefficient. How reliable is your estimate?

Year	2009	2010	2011	2012	2013	2014	2015	2016
Sales (millions of dollars)	887	1028	1251	1465	1735	2038	2280	2671

To perform linear regression on the TI-30X IIS calculator, follow these steps:

Clear Existing Data:

Press [2nd] followed by [DATA] to access the data menu. Use the left arrow key to navigate to CLRDATA. Press [ENTER] to clear any existing data.

Enter Data in Two-Variable Mode:

Press [2nd] then [STAT] to enter statistical mode. Use the right arrow key to select 2-VAR and press [ENTER]. The STAT indicator will appear on the display. Press [DATA] to begin data entry.

Input Data Points:

Enter the first X value and press the down arrow key. Enter the corresponding Y value and press [ENTER]. Repeat this process for all data pairs. Ensure you press [ENTER] or the down arrow after each Y value to save the data point.

Calculate Regression Statistics:

After entering all data points, press [STATVAR] to access statistical variables.

Use the left or right arrow keys to navigate through the variables:

- a:** Linear regression slope
- b:** Linear regression y-intercept
- r:** Correlation coefficient

The calculator will display the values for these variables, representing the linear regression equation $y = ax + b$.

SC Algebra 1
5.5 Linear Regression