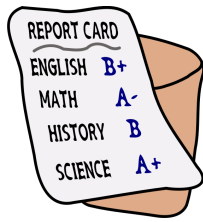


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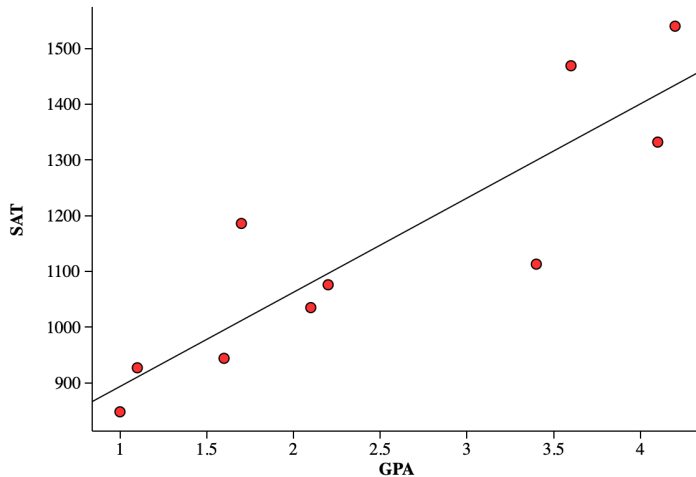


## Can you predict SAT score from GPA?

achieve more

# SAT

How well can we predict SAT scores from students' grade point average (GPA)? Let's start by looking at data from a random sample of 10 Seniors from a high school in Michigan.



### Regression Analysis: SAT versus GPA

Predictor	Coef	SE Coef	T	P
Constant	724.4	88.0	8.23	0.000
GPA	169.0	32.0	5.29	0.001

S = 116.9    R-Sq = 77.8%    R-Sq(adj) = 75.0%

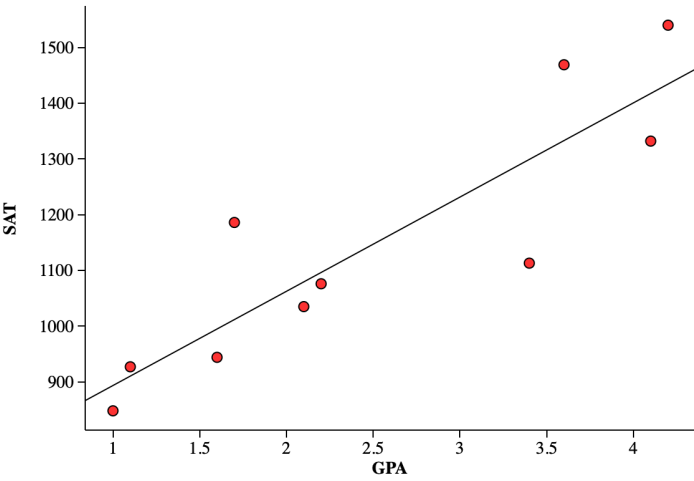
1. Is this a positive or negative relationship? Explain.
2. Are there any unusual features of the scatterplot? Explain.
3. What is the form of the relationship? Explain.
4. What is the strength of the relationship? Explain.

Summary: Describe the relationship between GPA and SAT score for this sample of Seniors.

5. What is the equation of the least squares regression line (LSRL):
6. Interpret the slope of the LSRL.
7. Interpret the y-intercept of the LSRL.

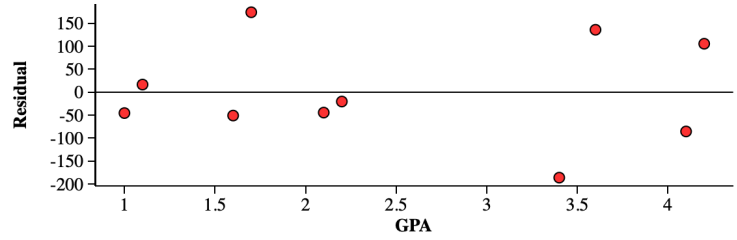
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**Regression Analysis: SAT versus GPA**



Predictor	Coef	SE Coef	T	P
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8. Predict the SAT score for a student who has a GPA of 3.4. Show work.
9. The student with a GPA of 3.4 got an actual SAT score of 1113. Calculate and interpret the residual.
10. What does the residual plot indicate about the use of a linear model for the data?
11. Interpret the standard deviation of the residuals (S).
12. Interpret the coefficient of determination ( $r^2$ ).
13. Do the data provide convincing evidence of a positive linear relationship between GPA and SAT for all Seniors at this high school?

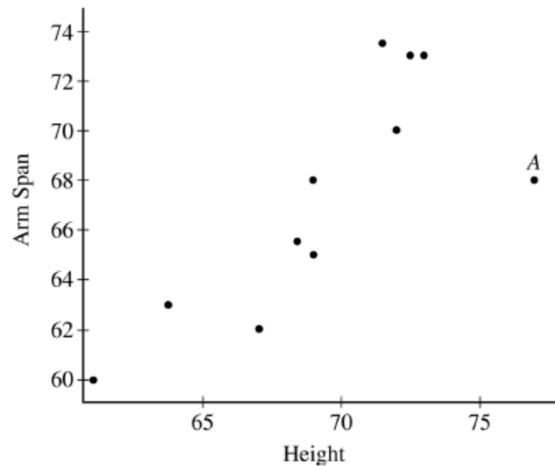
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## Two-Variable Analysis

Important ideas:

### Homework (AP Classroom)

A scatterplot of student height, in inches, versus corresponding arm span length, in inches, is shown below. One of the points in the graph is labeled A.



If the point labeled A is removed, which of the following statements would be true?

- A The slope of the least squares regression line is unchanged and the correlation coefficient increases.
- B The slope of the least squares regression line is unchanged and the correlation coefficient decreases.
- C The slope of the least squares regression line increases and the correlation coefficient increases.
- D The slope of the least squares regression line increases and the correlation coefficient decreases.
- E The slope of the least squares regression line decreases and the correlation coefficient increases.