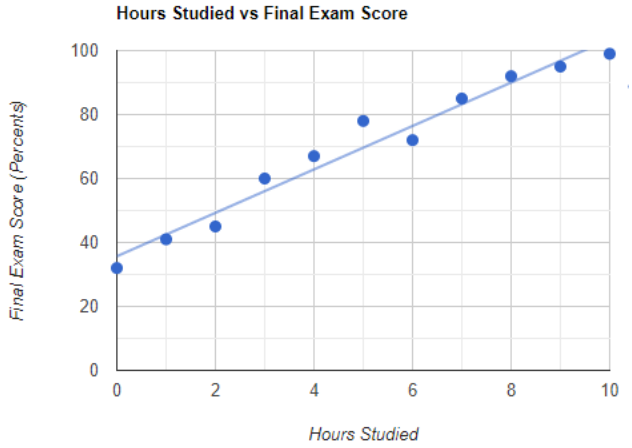
Stats **Name** _____ **Period** _____

Interpreting Linear Data

A teacher has collected the data for 11 students on the number of hours a student has studied and the percent correct they received on the final exam. Below you will find the scatterplot for this data along with other important information including the least squares regression line. Use the fill in the blank statements to interpret the various values and answer the questions.



x	0	1	2	3	4	5	6	7	8	9	10
y	32	41	45	60	67	78	72	85	92	95	99

Linear Regression Equation: $\hat{y} = 35.7 + 6.8x$

R^2=0.96

r=0.98

$s_{residuals}$=4.6

1. Identify the explanatory and response variable.

Explanatory (x) = _____ Response (y)=_____

2. Interpret the slope of the linear regression line.

The predicted _____ _____ by _____ for each additional
response var (y) increases or decreases slope w/ units of response var.

_____.
explanatory var (x)

3. Interpret the y-intercept of the linear regression line.

When no (or 0) _____, the predicted _____ is _____.
explanatory var. response var. y-intercept with units

4. Interpret the coefficient of determination, R^2.

_____% of the variability in _____ is accounted for with x=_____.
percent of coeff response var explanatory var

5. Interpret the correlation, *r*.

There is a _____ and _____ linear relationship between the
strong, moderate, or weak; positive or negative

_____ and _____.
explanatory var; response var

6. Interpret the standard deviation of the residuals.

The actual _____ is typically about _____ away from its predicted _____
response var; std dev with unit of y; response var.

with x=_____.
explanatory var

7. Calculate and interpret the residual for the student that studied for 7 hours and scored an 85% (the point (7, 85) on the scatter plot).

Step 1: Calculate $\hat{y}$ by plugging in x=7.

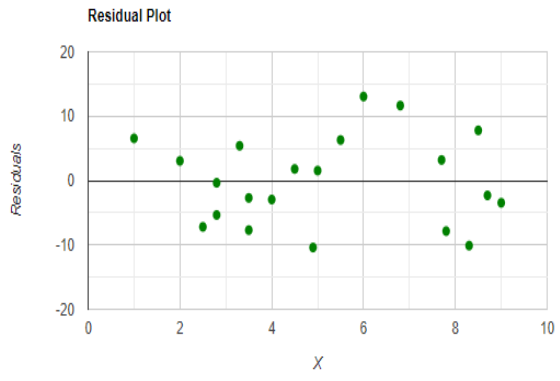
Step 2: Calculate the residual= $y - \hat{y}$.

Step 3: Interpret the residual.

The _____ is _____ _____ than expected based on the regression line
response var; residual w/ y units; more or less

using x=_____.
explanatory var

8. The residual plot for the linear regression line is shown below. Is the linear regression a good model for this data? Explain.



_____ because there is _____
Yes or No; a pattern or no pattern

in the residual plot.