AP Statistics Name:_____

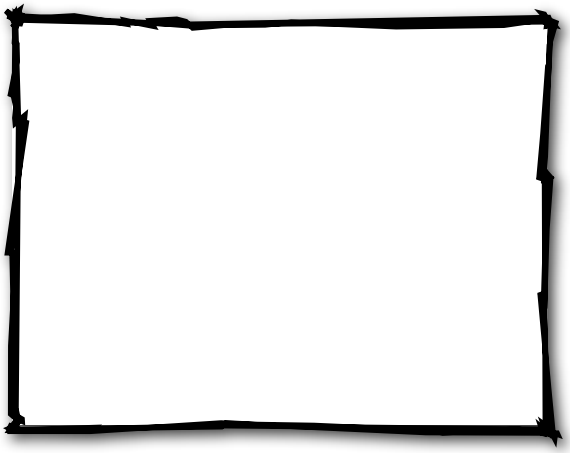
Chapter 3: Analyzing Bivariate Data Practice

Directions: Use what you have learned in Chapter 3 to answer the following questions about the bivariate data provided.

Studies have shown that people who suffer sudden cardiac arrest have a better chance of survival if a defibrillator shock is administered very soon after cardiac arrest. How is survival rate related to the time between when cardiac arrest occurs and when the defibrillator shock is delivered? The following data give y=survival rate (%) and x=call-to-shock time (min) for a cardiac rehabilitation center.

x	2	3	5	6	7	9	11	12
y	90	70	55	45	30	5	4	2

1. Construct and interpret a scatterplot of the data. What does the scatterplot suggest about the relationship between call-to-shock time and survival rate?



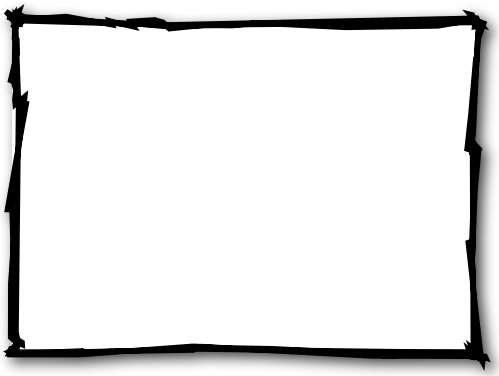
2. Calculate and interpret the mean and standard deviation for x and y in context.

3. Use your calculator to determine the equation of the least-squares regression line that models the relationship between x and y. Write this equation in context.

4. Interpret the slope of the LSRL in context.

5. Interpret the correlation coefficient, r, in context. Interpret the coefficient of determination, r^2, in context.

6. Construct and interpret a residual plot for this linear model. What does this plot suggest about the appropriateness of using this model to make predictions?



7. Use the equation of the least-squares regression line to predict the survival rate when the call-to-shock time is 3.5 min. Show work.

8. Predict the survival rate when call-to-shock time is 9 min. Calculate and interpret the residual for this prediction.

Looking ahead:

MINITAB software was used to find the LSRL for a study between x=age and y=days after arthroscopic shoulder surgery until an athlete could return to their sport. Use the output to determine the prediction model and correlation between these two variables.

Predictor	Coef	SE Coef	T	P
Constant	-5.054	4.355	-1.16	0.279
Age	0.2715	0.1427	1.9	0.094
	R-sq = 31.16%			