NAME:_____

CASE CLOSED

Are Baseballs Juiced?

Review the information in the Baseball Case Study (page 169).
Answer each of the following questions in complete sentences.
Be sure to communicate clearly enough for any of your classmates to understand
what you are saying.

I. SCATTERPLOT AND CORRELATION

1. Make a scatterplot of year versus the average number of home runs hit per game. Describe the pattern you see in the plot. Is there a linear relationship? Use your calculator to compute the correlation.

2. Look at the home run data since Rawlings started manufacturing baseballs for MLB in 1977. Make a scatterplot of these data. Describe the pattern you see. Find the correlation.

II. FITTING A LINEAR MODEL

3. Fit a linear model to the home run data from 1977 to 2000 using year as the explanatory variable. Interpret the slope and y intercept of your linear model in context.

4. Construct a residual plot. Discuss what this plot tells you about how well your model fits the data.

5. Interpret the value of r² in the context of the problem.

III. USING LINEAR MODELS FOR PREDICTION

6. Use your model to predict the mean number of home runs per game for 2001. Based on your answers to Questions 4 and 5, how accurate do you think this prediction will be?

7. The actual mean number of home runs hit per game in 2001 was 2.092. How good is the estimate that you found in your answer to the previous question?

8. Can we use these data to predict the mean number of home runs per game for 2020? Why or why not?