Name:_____ Date:_____ Period:_____

Chapter 13 Investigation Guide

Before you begin the written report:

1.) Identify an athletic event where you can take at least 30 attempts using a numerical explanatory variable and a categorical response variable with two categories (success, failure). For example, take at least 30 basketball shots at various distances from the hoop (x) and record the outcome of each shot (y).

2.) Randomly determine the order in which you will take the attempts. For example, put each of the 30 distances on a note card, shuffle the cards, and take your shots in the order determined by the cards.

3.) Collect your data and record the value of the explanatory variable and the value of the response variable for each attempt, in the order that you took the attempts.

To complete the written report:

1.) Write an introduction that describes the context of your research, what variables you used, what direction you thought the association will have, and how you collected the data. Include a table with the outcomes of each attempt, in the order that you took the attempts.

2.) Make a well-labeled scatterplot that shows the outcome of each attempt

3.) State the equation of the logistic model for your data.

4.) Use the equation of the logistic model to calculate and interpret the value of p for at least 2 different values of the explanatory variable. Show work!

5.) Include a table that shows these 2 predicted values and the predicted values for at least 4 additional values of the explanatory variable.

6.) Using the 6 values in the table, sketch the graph of the logistic model on the scatterplot from above.

7.) Discuss the direction of the association, including how you can identify the direction from the equation of the logistic model.

8.) Discuss how well the model fits the data, as well as any limitations of possible errors you may have made when building your model.

Web site for logistic regression applet:

- ✓ http://statpages.org/logistic.html

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Chapter 13 Investigation Guide: Checklist

- ☐ Title Page
- ☐ Table of Contents
- ☐ Introduction
  - What is the question of interest
  - Introduce the performance and context of the investigation
  - Give preliminary answers to the questions of interest
  - How was the data collected
  - What are the variables used
  - Direction of the association
- ☐ Raw Data Collection
  - Table with outcomes in the order of attempts
- ☐ Scatterplot
  - A scatterplot to show the relationship between the explanatory and response variable
- ☐ Logistic Model
  - State the equation of the logistic model
    - Include a screenshot of the applet data
  - Calculate and interpret for 2 values of the explanatory variable (show work for these 2)
  - Include a table that shows the 2 predicted values and at least 4 more values.
- ☐ Logistic Scatterplot
  - Using the scatterplot from above, now insert the 6 predicted values on the graph and connect those points with a curve
  - Discuss the direction of the association, how can you identify the direction
- ☐ Conclusion
  - Give a final conclusion based on the results
  - Summarize the investigation as a whole
- ☐ Errors/Causes
  - List any possible errors you may have made
- ☐ References
  - Use MLA formatting