Name:_____ Date:_____ Period:_____

Chapter 4 Investigation Guide

Before you begin the written report:

1.) Choose an athlete, team or league that you can compare in two different contexts. For example, are the Cowboys better at home or on the road? Or, choose two different athletes, teams or leagues that you can compare to each other. For example, who was a better quarterback, Joe Montana or Brett Favre?

2.) Choose <u>two numerical</u> variables that you can use to compare the performances of the athlete(s), team(s), or league(s) chosen above. For example, if you could compare the number of points scored by the Cowboys at home and on the road and the number of points allowed at home and on the road for their games in a particular season. Or, you could compare the number of passing yards for Joe Montana and Brett Favre and compare the number of touchdowns for Montana and Favre for each year of their careers.

3.) Find the relevant data on the Internet or another source. Many of the websites listed allow you to copy and paste the data into a spreadsheet program such as Excel. This will allow you to sort the data and do basic calculations. To find game-by-game data for a particular team, look for a link to "Schedule and Results." To find game-by-game data for a particular player, look for a link to "Game Logs." Do not include playoff games and make sure that there are at least 8 observations in each context.

To complete the written report:

1.) Write an introduction which states the question of interest and briefly introduces the athlete(s), team(s), or league(s) you are comparing. Also, describe which two numerical variables you are using to compare and why you chose those two variables. Describe how and where you obtained your data.

2.) List the raw data in a table for all four distributions.

3.) Create dotplots for each of the four distributions that you are investigating. On the dotplot include the mean and median for the data. Write a brief explanation for each dotplot that describes and states the max, min, mean, median, range and IQR of the data for each dotplot.

4.) For the first variable, display the two distributions using a frequency histogram AND a relative frequency histogram. Write a paragraph comparing the two distributions using the characteristics of shape, center, spread and outliers.

5.) For the second variable, display the two distributions using boxplots. Make sure to use the same scale so they are easy to compare! Write a paragraph comparing the two distributions using the characteristics of shape, center, spread and outliers.

6.) Write a brief conclusion that gives an overall answer to your question of interest. Make sure to contrast the ideas of performance and ability in your conclusion.

Name:_____ Date:_____ Period:_____

Chapter 4 Investigation Guide: Checklist

- ☐ **Title Page**
  - Title
  - Class Name
  - Your Name
  - Period
- ☐ **Table of Contents**
  - Contents of Each Page
  - Page Numbers
- ☐ **Introduction**
  - Introduce the athlete/team (include any accomplishments)
  - What is the question of interest and why did you select this topic
  - Describe how and where you obtained your data
  - Give a preliminary answer to the question of interest
- ☐ **Table**
  - Table of the raw data for all four distributions
- ☐ **Dotplots**
  - Dotplot for each of the four distributions (4 total)
  - Include on the dotplot-mean and median and any possible outliers
  - Brief explanation for each dotplot (4 total) that describes the max, min, mean, median, range and IQR values and if there are any outliers list them too.
- ☐ **Histograms**
  - Frequency Histogram comparing the data in one context (2 total)
  - Relative Frequency Histogram comparing the data in the same context (2 total)
  - Brief explanation comparing the histograms using the SOCS acronym (1 paragraph for both relative frequency and frequency histogram)
- ☐ **Boxplots**
  - Boxplots comparing the data in the other context (2 total)
  - Brief explanation comparing the boxplots using the SOCS acronym
- ☐ **Conclusion**
  - Give a conclusion based on your results. (1 page minimum)
- ☐ **Errors/Causes**
  - Discuss the possible errors and causes
  - 1 page (minimum)
- ☐ **References**
  - Using appropriate citing rules and techniques, cite all the references used for the investigation