

Name \_\_\_\_\_

## **Investigation 2: Are Baseball Games Taking Longer?**

### **Worksheet 2.2 Analyzing the Times**

#### **Scenario**

Have you been to a major league baseball (MLB) game recently? Or maybe watched one on television? What did you think about the length of the game? Was it too long, too short, or just about right?

The biggest complaint of many baseball fans—both young and old—is that the pace of the game is too slow. Throughout the decades, the length of major league games seems to have increased. Fans give all sorts of reasons for why the games might be getting longer. Some say it's due to more and longer TV commercial breaks; others say it's because of the multiple mid-inning pitching changes; still others suggest it's due to the use of replay by umpires to decide close calls.

What might be some other reasons the length of MLB games would increase?

What might be some suggestions for speeding up MLB games?

#### **Statistical Question** \_\_\_\_\_

#### **Collect Appropriate Data**

The data collected are from 50 randomly selected games from 1957, 46 games from 1987 and 43 games from 2017. The data were collected from samples of 9-inning games. Any games that lasted more than 9 innings, had rain delays, or shortened due to weather were not included.

Source: <https://www.baseball-reference.com/leagues/MLB/misc.shtml>

#### **Analyze the Data**

1. Work with members of your group to construct a dot plot of the sample lengths for baseball games in 1957. Use a scale from 130 minutes to 210 minutes.
2. Using the dot plot for the year 1957, estimate the center of the distribution. Describe the spread of the data.
3. Work with members of your group to construct a dot plot of the sample lengths for baseball games in 1987. Place the dot plot above the dot plot for year 1957.
4. Using the dot plot for the year 1987, estimate the center of the distribution. Describe the spread of the data.

5. Work with members of your group to construct a dot plot of the sample lengths for baseball games in 2017. Place the dot plot above the dot plots for the years 1957 and 1987.
6. Using the dot plot for the year 2017, estimate the center of the distribution. Describe the spread of the data.
7. Using the three dot plots, what observations can you make concerning the length of the games in the three years? Comment on the centers and spread of each dot plot.
8. To help compare the length of the games, work with members of your group to construct a box plot for the sample lengths of baseball games in each of the three years 1957, 1987, and 2017. Place the three box plots on the same number line with a scale from 130 minutes to 210 minutes to form parallel box plots.

Using the parallel box plots of the samples of lengths of games, how do the length of major league games in 1957, 1987, and 2017 compare? Comment on the center and spread for each distribution.

9. What advantages and disadvantages do box plots have over dot plots for making comparisons between multiple groups of data?

### **Interpret the Results in the Context of the Original Question**

10. Based on the three dot plots and parallel box plots you constructed, do you think the length of the games has changed by any meaningful amount? Explain your thinking.