

## Probability & Statistics Learning Target 2, 3 & 4

### Data Analysis of the World Series Games

Suppose you are the president of CBS, and you are preparing to submit a bid on televising the World Series. You have to decide on how much to bid, depending on how much advertising revenue you expect to receive. However, there is a good deal of uncertainty in this matter, since the length of the World Series is not known in advance. The series is played on a best 4-out-of-7 basis, so that the series can last anywhere from 4 to 7 games. To assist you in your calculations, you decide to look to the past. The following table tells you the length of the series in each of the years from 1905 on. (1903, 1919, 1920, and 1921 are left out because those series were played on a best 5-out-of-9 basis. Also, the series was not played in 1904 and 1994.)

Using the data, do the following.

1. Construct a frequency chart (using tally marks) of the number of games that were played in a World Series.
2. Draw a histogram of the number of games in a World Series and describe the distribution of the data.
3. Find the mean number of games in a World Series.
4. Find the standard deviation of the number of games in a World Series.
5. Is the mean and standard deviation a good way to describe the center and the spread of this data? Justify your answer. In your justification, explain the type of distributions that mean and standard deviation are associated with and therefore describe the best.
6. What are the other descriptions of center? What are the other descriptions of spread? Calculate these also. Are these better descriptions for this set of data? Justify your answer.
7. Make a probability model for this data by calculating the probability of playing 4 games, 5 games, 6 games, 7 games. What does the probability model tell you about this set of data?
8. Suppose that each game aired on television earns about 2 million dollars of advertising revenue. What is the least amount of revenue that you will earn? What is the most amount of advertising revenue that you will earn? Based on these possible earnings and also on the analysis of the data, prepare a bid that you are willing to pay to the baseball league for the exclusive rights to televise the World Series. Justify your bid.