Introduction

Baseball, one of America's favorite pastimes, is overflowing with mathematics. The National Baseball Statisticians Organization has asked you to step up to the plate! They need your help to analyze several seasons of baseball data.

Task

Baseball Challenge 1:
Gather different sets of baseball related data such as number of hits, times at bat, or home runs. Convert them into percents, fractions, and decimals, and then compare your data.

Baseball Challenge 2:
Last, put together a spreadsheet that displays all of your collected data and calculations. Then use your data to make some predictions.

The Process
Below is a detailed description of each challenge.

Baseball Challenge 1:

a. Choose three professional baseball teams and find or calculate the following statistics for each team:
    - The winning percentage for each year from 2011-2013;
    - The total winning percentage from the years 2011-2013;
    - Earned run average (ERA) for 2012 and 2013;
    - Team batting average for 2012 and 2013;
    - Each team's BB for 2013;
    - Each team's SO for 2013;
    - The percentage of bases on balls (BB) to strikeouts (SO);
    - Each team's RBI for 2013;
    - Each team's H for 2013; and
    - The percentage of runs batted in (RBI) to hits (H).

b. Next, write all of your percents as both fractions and decimals. Round all percents to the nearest whole percent. Make sure your fractions are in simplest form, and round all decimals to the hundredths place.

c. Finally, compare the data among your three teams. Write at least 2 paragraphs explaining which team, in your opinion, is a stronger team. Be sure to support your argument by using some of the statistics you gathered.

Baseball Challenge 2:

  a. Now create a spreadsheet. Your spreadsheet should include all of the data you collected. Thus, you must include every set of data needed to make your calculations.
  b. Use your spreadsheet, calculations, and knowledge of probability to predict each of the following:

  - The number of games each of your three teams would win if they played 500 games during their season;
  - The number of bases on balls (BB) for each team if they had 2,750 strikeouts; and
  - The number of runs batted in (RBI's) for each team if they had 1,500 hits (H).

Guidance
Below are some helpful hints for each challenge.

Baseball Challenge 1:

  a. When calculating the total winning percent of your chosen team, divide the total number of wins by the total number of games played for the 2011-2013 seasons.

Baseball Challenge 2:

  a. Your spreadsheet should include all of your calculations and all of the required categories to complete each calculation. Therefore, you should have the following categories in your spreadsheet:
  - Each team's winning percentage for each year between 2011-2013;
  - Each team's total winning percentage from the years 2011-2013;
  - Each teams ERA for 2012 and 2013;
  - Each team's batting average for 2012 and 2013;
  - Each team's BB for 2013;
  - Each team's SO for 2013;
  - Each team's percent of BB to SO;
  - Each team's RBI for 2013;
  - Each team's H for 2013; and
  - Each team's percent of RBI to H.
    You should have a total of 42 calculations.

  b. Predict the following things for each team you chose:
  - The number of games won,
  - The number of bases on balls, and
  - The number of runs batted in.

Conclusion
The National Baseball Statisticians Organization wants to commend you for your hard work and dedication to the team. Because of you, the National Baseball Statisticians Organization can give out the appropriate awards to the most deserving teams. Your knowledge of ratios and proportions was a great asset to this organization, and they are extremely proud of your hard work and effort! Congratulations on a job well done!