

# Average Athletics

## Working with the Meaning of Mean (Average)

**“When am I ever going to use this?”**  
Using the concepts in this worksheet, you will be able to interpret what the idea of average means in the context of athletics.

**O**A frequently misunderstood mathematical concept is the notion of the mean (average). In this worksheet we will investigate the idea of the mean (average) in different contextual situations dealing with athletes and athletics.

1. Geography majors who graduated from the University of North Carolina (UNC) reported an average salary far higher than geography graduates at other universities. The average salary at the time of the report was over \$400,000 per year. (Source: [www.unc.edu](http://www.unc.edu)) From the options below select the one you believe to be the most likely reason for this occurring.
  - a. UNC has a superior geography faculty
  - b. UNC attracts superior geography students
  - c. UNC is the university that Michael Jordan (Former Chicago Bulls NBA star) graduated from as a Geography major
  - d. UNC geography students do not tell the truth about their starting salary on surveys

2. Explain using a numerical example why you chose the option you did in problem 1.

3. Why would a single outlier (data value far from the others) affect the average salary so much?

4. In NASCAR, Jeff Gordon once won the Pennsylvania 500 race in 3.713 hours. Calculate his average speed for the 500 miles of the race. (Source: [www.espn.com](http://www.espn.com))

5. If Gordon was traveling at 218 miles per hour at one point in time during the Pennsylvania 500 race, how is this possible considering your answer to problem 4?

In baseball, the batting average (BA) of a player is an important statistic that is used by teams to determine how successful their players have been at the plate. The BA is calculated by taking the total number of hits divided by their official at bats (do not include walks or plate appearances where a player is hit by a pitch or performed a sacrifice).

6. In 2011 in the National League two players were competing to become the batting average champion. It came down to the last game of the season between Jose Reyes of the New York Mets and Ryan Braun of the Milwaukee Brewers. Jose Reyes ended the season with a BA of 0.337 and Braun with 0.332. Interpret what each of the batting averages mean in terms of hits and at bats. (Source: [www.espn.com](http://www.espn.com))

Another important statistic in baseball is a pitcher's ERA (earned run average). ERA is calculated by taking the number of earned runs a pitcher has (ER) times 9 innings and then dividing by the number of innings pitched (IP) or  $(ERA = \frac{9(ER)}{IP})$ .

7. Clayton Kershaw of the Los Angeles Dodgers had the lowest ERA for 2011. Calculate his ERA considering he had 59 earned runs and pitched 233.3 innings. (Source: [www.espn.com](http://www.espn.com))

8. Explain what Kershaw's ERA means in terms of pitching.