

# Baseball Statistics



## Batting Average

Calculating a baseball player's batting average is not a difficult task at all. A batting average represents the percentage of at bats that result in hits for a particular baseball player. The formula is:

$$\text{Hits} / \text{At Bats} = \text{Batting Avg.}$$

That's all there is to it. For example, if Albert Pujols gets 195 hits in a season and has 535 at bats, his batting average would be  $195/535$ , or .364. The batting average is usually represented not as a percentage (i.e. 36.4%), but instead as a decimal number with three places after the decimal. A batting average of 1.000 means that the player gets a hit every time he comes to bat, and an average of .000 means the player has no hits.

It should also be noted that not every time a batter comes to the plate counts as an at bat. Plate appearances that do not count as at bats include walks, hit-by-pitches, sacrifices, etc.

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Using the current batting statistics on the board, calculate the batting average for the following players in the American League:

1. Nick Castellanos (DET) \_\_\_\_\_
2. David Ortiz (BOS) \_\_\_\_\_
3. Manny Machado (BAL) \_\_\_\_\_
4. Mike Trout (LAA) \_\_\_\_\_
5. Victor Martinez (DET) \_\_\_\_\_

# Earned Run Average

A major league pitcher is often judged on the basis of his earned run average, or ERA. This number represents the average number of earned runs given up by the pitcher per nine innings.

An earned run is any run that the opponent scores off a particular pitcher except for runs scored as a result of errors. For instance, if Max Sherzer gives up three solo homeruns, and then an error causes another run to score, he is only credited with those first three runs that were "his fault."

The earned run average can be calculated using the following formula:

$$\text{(Earned Runs/Innings Pitched)} \times 9$$

Therefore, if Justin Verlander is charged with 19 earned runs in his first 89 innings pitched, his ERA would be 19 divided by 89, which is .2135, times 9, which is 1.92, a very good number.

$$(19 \text{ runs} / 89 \text{ innings}) \times 9 = 1.92$$

Don't forget the 9 at the end. By calculating runs/innings you have only figured out earned runs per inning, but you must keep in mind that an ERA is actually earned runs per nine innings, since a regulation game is 9 innings. The number usually represented with two places after the decimal, shows how many runs the pitcher gives up in an average complete game.

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Using the current pitching statistics on the overhead, calculate the ERA for:

1. Stephen Strasburg (WSH) \_\_\_\_\_
2. Felix Hernandez (SEA) \_\_\_\_\_
3. Jordan Zimmerman (DET) \_\_\_\_\_
4. Jason Hammel (CHC) \_\_\_\_\_