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Charles T Zahn* (candszahn@sbcglobal.net), 5208 Renaissance Avenue, San Diego, CA 921225602. *Individual player productivity in baseball and basketball can be measured in a Mathematically coherent fashion using play-by-play data.* Preliminary report.

Productivity is a ratio of good results to resources consumed. In baseball, the Official Records do not count each player's consumption of resources (Outs made), but this important count can be determined from modern play-by-play data. The same is true for the good results (Net Base Advances). The detailed play-by-play data now allows us to correctly and completely calculate what Barry Codell called the Base Out Percentage over thirty years ago. Furthermore, this productivity measure can be broken down into several multiplicative factors to analyze a player's performance in more depth. In basketball, the good results are points scored which are precisely recorded, but each player's use of possessions (the resource) is not carefully recorded. Once again, the details of play-by-play allow an accurate calculation of possessions used, which involves field goals attempted, free throw groups attempted, turnovers, and offensive rebounds. As in baseball, the productivity ratio (points per possession) can be viewed as a product of several factors. (Received September 17, 2011)