The purpose of this paper is to determine the effectiveness of achievement on Web-based homework assignments on the overall comprehension measured by final exam in a first year college algebra course. Over 1500 students were included in the study for three years period. Based on statistical analysis, we show that Web-based homework is a strong indicator of final performance on a uniform college algebra exam and we measure this association. We also discuss the advantages and disadvantages of Web-based homework assignments. (Received September 26, 2005)