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**Arnold Lebow\*** ([lebow@yu.edu](mailto:lebow@yu.edu)), Mathematics Department, Yeshiva University, New York, NY 10033. *Vector spaces and linear functionals in elementary probability.*

A natural and efficient way to introduce probability to students who have had experience with linear algebra is by introducing the axioms for mathematical expectation. These axioms state that the expectation operator is a normalized positive linear functional on the vector space of random variables. The intuitive content of the axioms will be discussed. A sample of the problems that can be solved by direct use of the axioms will be presented. The introduction of probability measures using this approach will be discussed. The definition of independence in this approach will be presented. It will be shown how orthogonal projections and least squares methods may be used to define and understand variance and some of the forms of conditional expectation. (Received September 24, 2006)