In this paper we introduce the definition of a reality-based algebra as well as a subclass of reality-based algebras, table algebras. We look at a specific reality-based algebra (RBA) of dimension 5 of the form $\mathbb{C} \oplus M_2(\mathbb{C})$ and provide formulas for the structure constants of this algebra. We look at the structure constants and determine certain conditions when this RBA is a table algebra. (Received September 15, 2016)