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Neil Hindman* (nhindman@aol.com), Department of Mathematics, Howard University, Washington, DC 20059, and **Dona Strauss**. *Cartesian Products of Sets Satisfying the Central Sets Theorem.*

Central subsets of a discrete semigroup S have very strong combinatorial properties which are a consequence of the *Central Sets Theorem*. We show here that, not only is the Cartesian product of two central sets central, but in fact the Cartesian product of any two sets satisfying the conclusion of the Central Sets Theorem satisfies the conclusion of the Central Sets Theorem. Intimately related to the notion of a central set is something we call a J -set. These sets have many of the combinatorial properties of central sets and we show that this notion is also preserved under finite Cartesian products. Finally, we characterize when the Cartesian product of infinitely many sets is central. (Received August 28, 2008)