1056-Z1-484 **Chelsea Cerini*** (cerinicl@washjeff.edu), Washingon, PA, and **Sommer Sprowls** and **Roman Wong**. *Set Difference and Jump Sequences.*

The study of set differences dates back to the 1940's by prominent mathematicians, including Erdös, Miller, and Wichmann. Let A be a finite set. Define the set difference $A-A = \{a-a \mid a \in A\}$. Let $n \in \mathbf{N}$. Denote $[n] = \{0, 1, 2, ..., n\}$. Let $A \subseteq [n]$ be a k-element subset, and denote the cardinality of A by $|A|$. A is said to be n -complete if $|A - A| = |[n] - [n]|$. That is, the set $A - A$ generates all possible $2n + 1$ differences in $[n] - [n]$. In our studies, we tried to find methods to create the smallest n-complete subsets of $[n]$, called bases. We examined processes already investigated by others, such as the modular arithmetic method and the method developed by Wichmann and improved by Miller. We also explored jump sequences, which are created by the differences between values in A, and we compiled a list of requirements needed for these sequences to result in complete sets. Our paper combines and details the many different approaches that can be used to create n-complete sets, most of which have been scattered about in various places for over sixty years. (Received September 09, 2009)