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**Ligo G Richard\*** (ligorg@westminster.edu), 924 Westminster College, New Wilmington, PA 16172, and **Larson-Koester R Miriam**. *The Subgraph Summability Number of a Graph*.

Given a graph  $G$ , a vertex labeling of  $G$  is a mapping  $\alpha : V(G) \rightarrow \mathbb{N}$ , assigning a positive integer value to each vertex. With this we can consider labels of connected induced subgraphs  $G[U]$  for  $U \subseteq V(G)$ , and define  $\alpha(G[U]) = \sum_{u \in U} \alpha(u)$ . The subgraph summability number of a connected graph  $G$  is the largest integer  $\sigma(G)$  so that the label sums of connected induced subgraphs cover the integers 1 through  $\sigma(G)$ . The question of graph labeling is intimately related to ideas in number theory and combinatorics. We investigate summability labelings for cycles, centipede graphs, circulant graphs, and multipartite graphs and generalize their behavior. (Received July 27, 2010)