The number partitioning problem (NPP) is to divide a set of positive integers $a_1, \ldots, a_n$ into two disjoint subsets such that the difference of the subset sums, called the discrepancy ($\Delta$), is minimized. NPP is NP-complete, has a well-characterized phase transition, and finds applications in VLSI design, multiprocessor scheduling, cryptography etc. When $a_j = U[1, R]$ for some integer $R$, it is known that the optimal $\Delta = O(\sqrt{n} 2^{-n} R)$. The best known polynomial time approximation algorithm was proposed by Karmarkar and Karp (KK), and gives $\Delta_{KK} = O(n^{-0.72} \log n R)$. We propose a mixed integer program (MIP) model for solving NPP. We consider a basis reduction-based reformulation of the MIP in order to handle the typically huge $a_j$’s. We also consider direct application of basis reduction (BR) to NPP, similar to BR attacks on 0-1 knapsack problems, but on a scaled matrix to find near-optimal solutions (for large values of $R$, $\Delta$ is typically much bigger than 0). Finally, we consider various divide-and-conquer strategies, where smaller NPP sub-problems are solved to optimality, and their solutions are combined to obtain near-optimal solutions for the original NPP instance. (Received July 27, 2007)