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R. Bruce Richter* (brichter@uwaterloo.ca), Department of Combinatorics and Optimization, Faculty of Mathematics, University of Waterloo, Waterloo, ON N2L 3G1, Canada. *Kleitman's Parity Theorem for crossing numbers.*

Kleitman proved that the complete bipartite graph $K_{m,n}$ (both m and n odd) has the property that in any two (appropriate) drawings of it in the plane, the numbers of crossings have the same parity. He used this to evaluate the crossing number of $K_{m,n}$, whenever $m \leq 6$. His proof was sufficiently controversial that he published a second paper clarifying the proof.

His argument involves converting one drawing into the other by “sliding” the edges around and counting how much the crossing number changes as an edge slides over a vertex. In this talk, I will present a much more combinatorial proof that Dan McQuillan and I have found. (Received September 21, 2010)