

1035-05-730

Marc S. Renault* (msrenault@ship.edu), Shippensburg University, Mathematics Department,
1871 Old Main Drive, Shippensburg, PA 17257. *A New Proof of the Ballot Theorem.*

In an election, Alice receives a votes, Bob receives b votes, and $a > kb$ for some positive integer k so Alice wins. In how many ways can the $a + b$ ballots be permuted so that as the votes are being recorded, Alice maintains more than k times as many votes as Bob? The ballot theorem tells us that the answer is $\frac{a-kb}{a+b} \binom{a+b}{a}$.

This problem was first introduced in 1887, and many proofs have been devised since then. We provide a new proof based on a uniform partition of a set of lattice paths. (Received September 14, 2007)