

Meeting: 1003, Atlanta, Georgia, MAA CP X1, MAA General Contributed Paper Session, I

1003-X1-806 **Marc S Renault*** (msrena@ship.edu), Shippensburg University, Mathematics Department, Shippensburg, PA 18013. *Yet Another Proof that $C_n = \frac{1}{n+1} \binom{2n}{n}$, and a Generalization of the Catalan Sequence Using Lattice Paths.*

A staircase walk is a lattice path where each step moves one unit in the positive x or positive y direction. It is easy to show that the number of staircase walks from $(0, 0)$ to (n, n) is $\binom{2n}{n}$; furthermore, the number of such walks that stay on or below the diagonal is $C_n = \frac{1}{n+1} \binom{2n}{n}$, the n -th Catalan number. We provide an elementary counting proof of this fact which leads (unlike André's reflection method, the usual combinatorial proof) to a straightforward generalization of the Catalan numbers. (Received September 29, 2004)