

1062-05-123

Bruce E. Sagan* (sagan@math.msu.edu), Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027, and **Carla D. Savage** (savage@cayley.csc.ncsu.edu), Department of Computer Science, North Carolina State University, Raleigh, NC 27695-8206.
Combinatorial interpretations of binomial coefficient analogues related to Lucas sequences.

Let s and t be variables. Define polynomials $\{n\}$ in s, t by $\{0\} = 0$, $\{1\} = 1$, and $\{n\} = s\{n-1\} + t\{n-2\}$ for $n \geq 2$. If s, t are integers then the corresponding sequence of integers is called a *Lucas sequence*. Define an analogue of the binomial coefficients by

$$\left\{ \begin{matrix} n \\ k \end{matrix} \right\} = \frac{\{n\}!}{\{k\}! \{n-k\}!}$$

where $\{n\}! = \{1\}\{2\}\cdots\{n\}$. It is easy to see that $\left\{ \begin{matrix} n \\ k \end{matrix} \right\}$ is a polynomial in s and t . We give two combinatorial interpretations for this polynomial in terms of statistics on integer partitions inside a $k \times (n-k)$ rectangle. When $s = t = 1$ we obtain combinatorial interpretations of the fibonomial coefficients which are simpler than any that have previously appeared in the literature. (Received August 03, 2010)