The geometric distribution on \( \mathbb{N} \) and the exponential distribution on \([0, \infty)\) both have the constant rate property: the upper probability function \( F \) and the probability density function \( f \) (with respect to counting measure in the first case and Lebesgue measure in the second) are related by \( f = \alpha F \) for some \( \alpha > 0 \). Moreover, these distributions are the only ones (on \( \mathbb{N} \) and \([0, \infty)\), respectively) with this property. The two distributions are the building blocks of other important distributions and random processes.

In this talk I will discuss probability distributions on general partially ordered sets that have the constant rate property. In spite the generality, and the lack of any other algebraic structure, a surprising amount of the theory stills goes through—constant rate distributions have nice moment properties and lead to “gamma” distributions and a “Poisson” process. In many respects, constant rate distributions describe the most random way to put points in the poset. Finally, I will discuss the characterization problem: when does a poset support constant rate distributions? (Received August 18, 2008)