



MATHEMATICS

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# Probability and statistics

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## 1 Definitions

## 2 Discrete uniform distribution

### 2.1 Description

Used to model experimental outcomes which are "equally likely".

#### 2.1.1 Probability mass function

$$P(X = k) = \frac{1}{N}, \quad k = 1, \dots, N$$

#### 2.1.2 Cumulative distribution function

$$P(X \leq k) = \frac{k}{N}, \quad k = 1, \dots, N$$

#### 2.1.3 Plot

### 2.2 Moments

Mean	$\frac{N+1}{2}$
Variance	$\frac{(N-1)(N+1)}{12}$