Definition

Given a probability space $(\Omega, \mathcal{F}, \mathbf{P})$, a sequence of $\mathcal{G}_1, \ldots, \mathcal{G}_n$ of sub-σ-algebras of $\mathcal{F}$, are *independent* if

$$\mathbf{P}(A_1 \cap A_2 \cap \cdots A_n) = \prod_{i=1}^{n} \mathbf{P}(A_i)$$

for any $A_1 \in \mathcal{G}_1$, $A_2 \in \mathcal{G}_2$, $\ldots$, $A_n \in \mathcal{G}_n$. A family $\{\mathcal{G}_i\}_{i \in I}$ is a family of sub-σ-algebras of $\mathcal{F}$ is *independent* if any finitely many of them are independent.

Independent Sigma Algebras

Dependent Events · Probability Measures

Conditional Event Probabilities · Measures

Event Probabilities · Sigma Algebras

Extended Real Numbers · Real Series

Real Limits

Absolute Value

Probability Distributions · Interval Length

Intervals

Real Line

Real Summation · Real Order · Real Sequences

Real Numbers · Rational Order · Sequences

Integral Line · Rational Numbers · Subset Algebra

Integer Arithmetic · Cardinality · Lists

Natural Multiplicative Identity · Natural Additive Identity · Natural Summation · Family Operations · Finite Sets · Set Numbers · Direct Products

Identity Elements · Arithmetic · Integer Products · Equivalent Sets

Operations · Natural Power · Natural Products · Integer Sums · Integer Order · Comparisons · Family Unions and Intersections · Function Inverses

Natural Sums · Integer Numbers · Orders · Families · Function Composites · Function Images

Recursion Theorem · Equivalence Relations · Natural Order · Converse Relations · Functions

Peano Axioms · Relations

Natural Induction

Uncertain Outcomes · Set Products · Subset Systems

Natural Numbers · Generalized Set Dualities · Set Powers · Ordered Pairs

Set Symmetric Differences · Set Dualities · Partitions · Intersection of Empty Set · Successor Sets · Unordered Triples · Set Unions and Intersections

Set Complements · Pair Intersections · Set Intersections · Pair Unions

Set Difference · Set Unions

Empty Set · Unordered Pairs

Geometry · Set Specifications

Set Equality

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets · Identities

Names

Letters · Objects