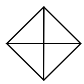


Why

Conditioning defines a new probability mass function on the set of outcomes.

Definition

The conditional probability of any two events defines a new probability mass function over the set of outcomes which is in the second event. The conditional probability of an outcome is the probability of the second event divided into the original probability of the outcome.

Notation

Let p be a probability mass function on the set of outcomes A with the corresponding event probability function $\mathbf{P}$. Then the conditional probability mass function of C conditioned on B is $q : C \to \mathsf{R}$, defined so that

$$q(a) = \begin{cases} \frac{p(a)}{\mathbf{P}(B)} & \text{if } a \in B \\ 0 & \text{otherwise .} \end{cases}$$

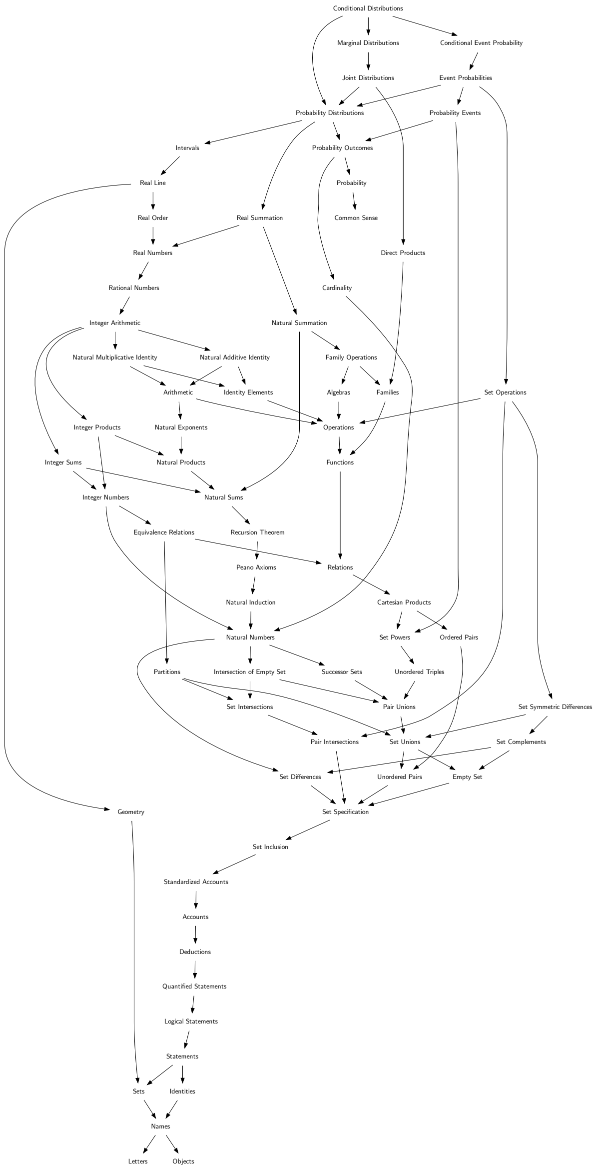
Definition

Notation

Let R denote the set of real numbers. Let $A_1, \dots, A_n$ be a sequence of non-empty finite sets. Let $A = \prod_{i=1}^{n} A_i$ Let $p : A \to R$ be a distribution on A. We denote the conditional distribution of i on j of p by $p_{i|j} : A_i \times A_j \to R$ For $i, j = 1, \ldots, n$ and $i \neq j$ p_i satisifes

$$p_{i|j}(b, c)p_j(c) = p_{ij}(b, c)$$

for every $b \in A_i$ and $c \in A_j$.


Conditional Distributions
Marginal Distributions
Conditional Event Probability
Joint Distributions
Event Probabilities
Probability Distributions
Probability Events
Intervals
Probability Outcomes
Real Line
Probability
Real Order
Real Summation
Common Sense
Real Numbers
Direct Products
Rational Numbers
Cardinality
Integer Arithmetic
Natural Summation
Natural Multiplicative Identity
Natural Additive Identity
Family Operations
Arithmetic
Identity Elements
Algebras
Families
Set Operations
Integer Products
Natural Exponents
Operations
Integer Sums
Natural Products
Functions
Integer Numbers
Natural Sums
Equivalence Relations
Recursion Theorem
Peano Axioms
Relations
Natural Induction
Cartesian Products
Natural Numbers
Set Powers
Ordered Pairs
Partitions
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Intersections
Pair Unions
Set Symmetric Differences
Pair Intersections
Set Unions
Set Complements
Set Differences
Unordered Pairs
Empty Set
Geometry
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects