**Why**

1

**Result**

**Prop. 1.** *Let $A_1, \ldots, A_n$ be a partition of a set of outcomes $A$. Let $\mathbf{P}$ be an event probability function for some probability mass function. Let $B \subset A$ an event. Then*

$$\mathbf{P}(B) = \sum_{i=1}^{n} \mathbf{P}(B \cap A_i).^2$$

This result is often known as the *law of total probability*.

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[1]Future editions will include.

[2]Future editions will inclue an account.

Total Probability

Event Probabilities

Probability Distributions

Intervals

Real Line

Real Order

Real Summation

Real Numbers

Integral Line

Rational Numbers

Integer Arithmetic

Natural Multiplicative Identity

Natural Additive Identity

Arithmetic

Identity Elements

Natural Summation

Integer Products

Natural Powers

Family Operations

Integer Sums

Natural Products

Algebras

Set Operations

Integer Numbers

Natural Sums

Operations

Families

Equivalence Relations

Recursion Theorem

Functions

Partitions

Peano Axioms

Relations

Natural Induction

Uncertain Outcomes

Cartesian Products

Natural Numbers

Set Powers

Ordered Pairs

Intersection of Empty Set

Successor Sets

Unordered Triples

Set Intersections

Pair Unions

Set Symmetric Differences

Pair Intersections

Set Unions

Set Complements

Unordered Pairs

Set Differences

Empty Set

Geometry

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets

Identities

Names

Letters

Objects