Why

We want to talk about making a sequence of decisions.

Definition

Let S and A be finite sets. Let $T : S \times A \to (S \to [0,1])$ so that for each $s \in S$ and $a \in A$, $T_{sa} : S \to [0,1]$ is a probability distribution over S. We call the ordered triple (S, A, T) a *finite state-action process.*

A *trajectory* in the *state set* S and *action set* A is a sequence in $S \times A$. We interpret

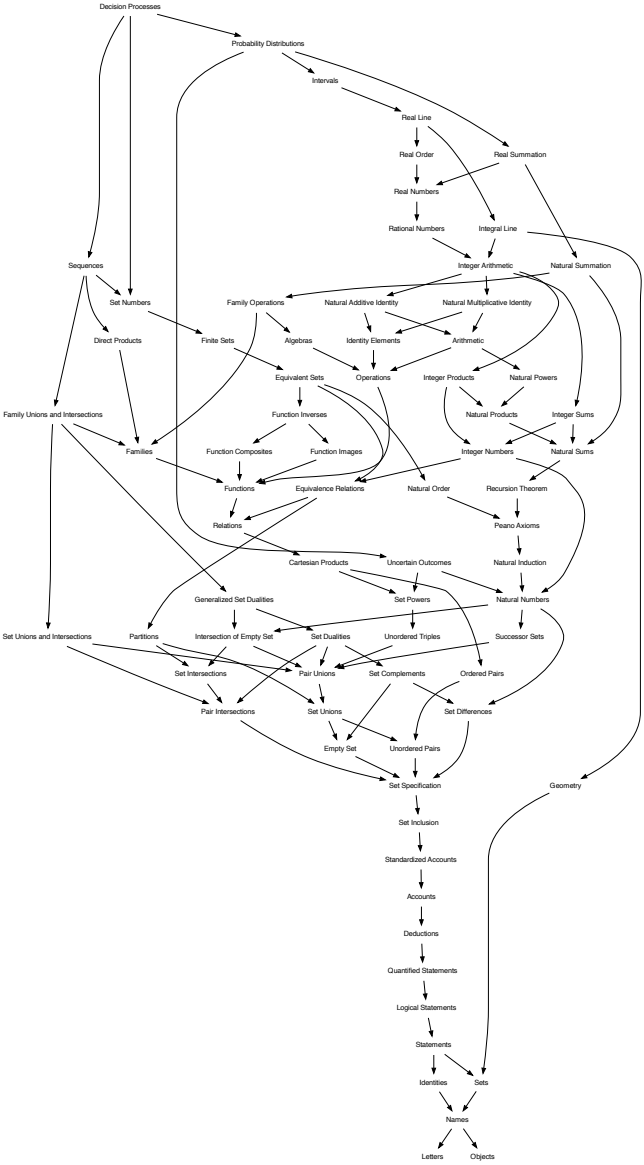
Let $r : S \times A \times S \to \mathbf{R}$, $N \in \mathbf{N}$.

A *decision process* is a sequence $(S, A, T, r, \gamma,$, consists of two sets, a function set, an action

Other terminology

Decision processes are commonly called *markov decision processes.*[1]

[1] As usual, we avoid this terminology in connection with the projects guidelines against using particular names.


Decision Processes
Probability Distributions
Intervals
Real Line
Real Order
Real Summation
Real Numbers
Rational Numbers
Integral Line
Integer Arithmetic
Natural Summation
Sequences
Set Numbers
Family Operations
Natural Additive Identity
Natural Multiplicative Identity
Direct Products
Finite Sets
Algebras
Identity Elements
Arithmetic
Equivalent Sets
Operations
Integer Products
Natural Powers
Family Unions and Intersections
Function Inverses
Natural Products
Integer Sums
Families
Function Composites
Function Images
Integer Numbers
Natural Sums
Functions
Equivalence Relations
Natural Order
Recursion Theorem
Relations
Peano Axioms
Cartesian Products
Uncertain Outcomes
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Unions and Intersections
Partitions
Intersection of Empty Set
Set Dualities
Unordered Triples
Successor Sets
Set Intersections
Pair Unions
Set Complements
Ordered Pairs
Pair Intersections
Set Unions
Set Differences
Empty Set
Unordered Pairs
Set Specification
Geometry
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects