Why

We want to discuss making several decisions at different stages.

Definition

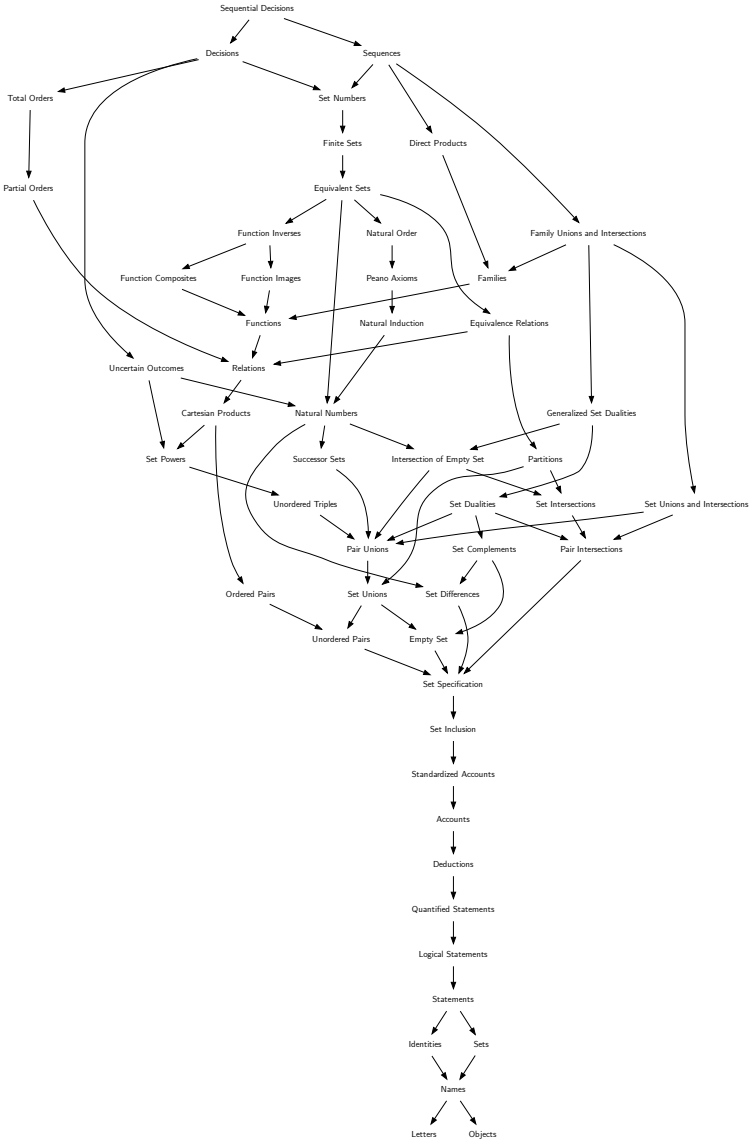
Let A be a set of actions and O a set of outcomes. Let $\{A'_{o,a}\}$ be a family of action sets, $\{O'_{o,a}\}$ be a family of outcome sets and $\{\preceq_{o,a}\}$ be a family of preferences indexed by $O \times A$.

We call the sequence $(A, O, \{A'_{s,a}\}, \{O'_{s,a}\}, \{\preceq_{s,a}\})$ a *two-stage decision problem*. The intuition is that we will select an action $a \in A$ prior to observing an outcome $o \in O$. We will then face the simple decision problem $(A'_{s,a}, O'_{s,a}, \preceq_{s,a})$.

A *preference* for the two stage decision problem is a total order on the set

$$\left\{(a, o, a', o') \;\middle|\; a \in A, o \in O, a' \in A'_{a,o}, o' \in O'_{a,o}\right\}.$$

A *two-stage decision problem* is a sequence $(A, O,$


Sequential Decisions
Decisions
Sequences
Total Orders
Set Numbers
Finite Sets
Direct Products
Partial Orders
Equivalent Sets
Function Inverses
Natural Order
Family Unions and Intersections
Function Composites
Function Images
Peano Axioms
Families
Functions
Natural Induction
Equivalence Relations
Relations
Uncertain Outcomes
Cartesian Products
Natural Numbers
Generalized Set Dualities
Set Powers
Successor Sets
Intersection of Empty Set
Partitions
Unordered Triples
Set Dualities
Set Intersections
Set Unions and Intersections
Pair Unions
Set Complements
Pair Intersections
Ordered Pairs
Set Unions
Set Differences
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects