Why

We want to handle elements of a set in a particular order.

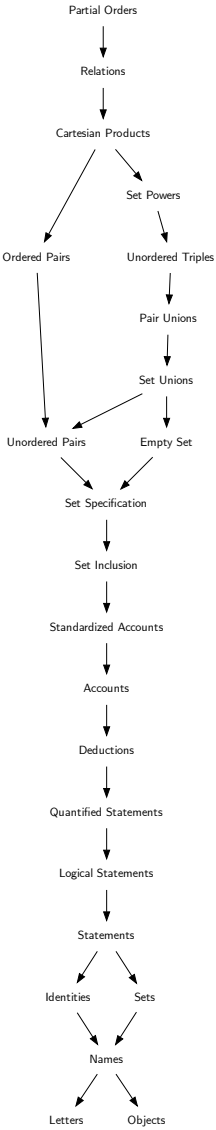
Definition

A relation R in set X is called *antisymmetric* if, for every $x, y \in X$, xRy and yRx implies that $x = y$. A *partial order* is a reflexive, transitive, and antisymmetric relation. If $(a, b) \in R$ we say that a *precedes* b and that b *succeeds* a.

A *partially ordered set* (X, R) is a set X and a partial order R on X. The language partial is meant to suggest that two elements need not be comparable. For example, suppose R is $\{(a, a) \mid a \in A\}$; we may justifiably call this no order at all and call A totally unordered, but it is a partial order by our definition.

Notation

We denote a partial order on a set A by $\preceq$. We read $\preceq$ aloud as "precedes or equal to" and so read $a \preceq b$ aloud as "a precedes or is equal to b." If $a \preceq b$ but $a \neq b$, we write $a \prec b$, read aloud as "a precedes b."


Partial Orders
Relations
Cartesian Products
Set Powers
Ordered Pairs
Unordered Triples
Pair Unions
Set Unions
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects