Why

[1]

Definition

Let $(A, \leq)$ be a chain.

A *lower bound* for $B \subset A$ is an element $a \in A$ so that $a \leq b$ for all $b \in B$. A set is *bounded from below* if it has a least upper bound. A *greatest lower bound* for B is an element $c \in A$ so that c is a lower bound and $c < a$ for all other lower bounds a.

Proposition 1. *If there is a greatest lower bound it is unique.*[2]

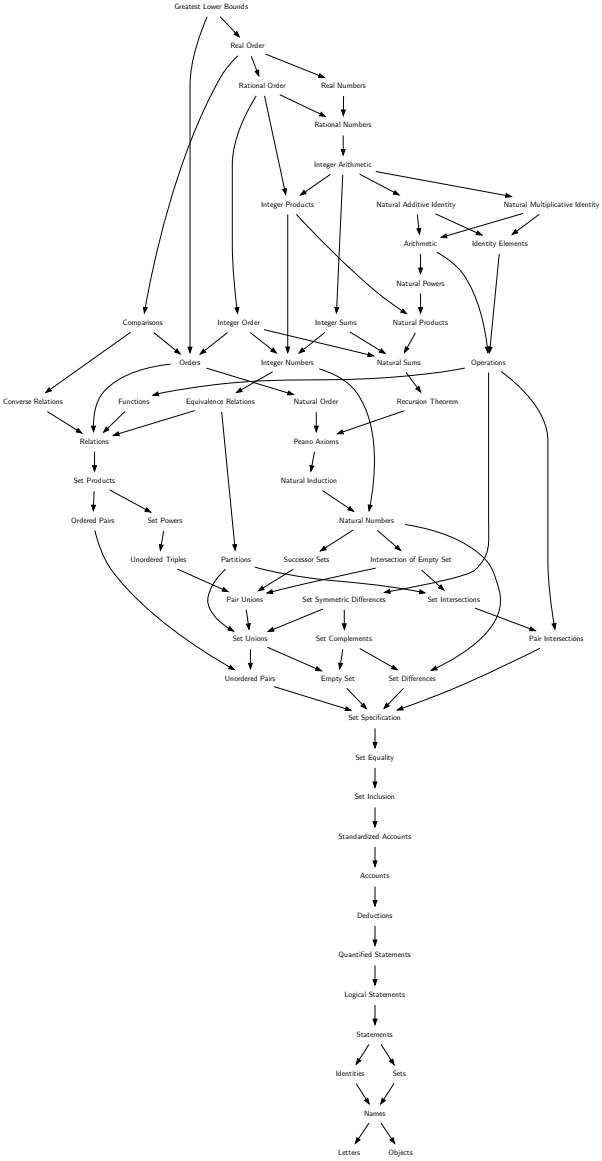
We call the unique greatest lower bound of a set (if it exists) the *infimum*.

Notation

We denote the infimum of a set $B \subset A$ by $\inf A$.

[1] To be given in future editions.

[2] Proof in future editions.


Greatest Lower Bounds
Real Order
Rational Order
Real Numbers
Rational Numbers
Integer Arithmetic
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Arithmetic
Identity Elements
Natural Powers
Comparisons
Integer Order
Integer Sums
Natural Products
Orders
Integer Numbers
Natural Sums
Operations
Converse Relations
Functions
Equivalence Relations
Natural Order
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Ordered Pairs
Set Powers
Natural Numbers
Unordered Triples
Partitions
Successor Sets
Intersection of Empty Set
Pair Unions
Set Symmetric Differences
Set Intersections
Set Unions
Set Complements
Pair Intersections
Unordered Pairs
Empty Set
Set Differences
Set Specification
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects