## Why

We want to generalize rectangles and cubes to $n$-dimensional space.

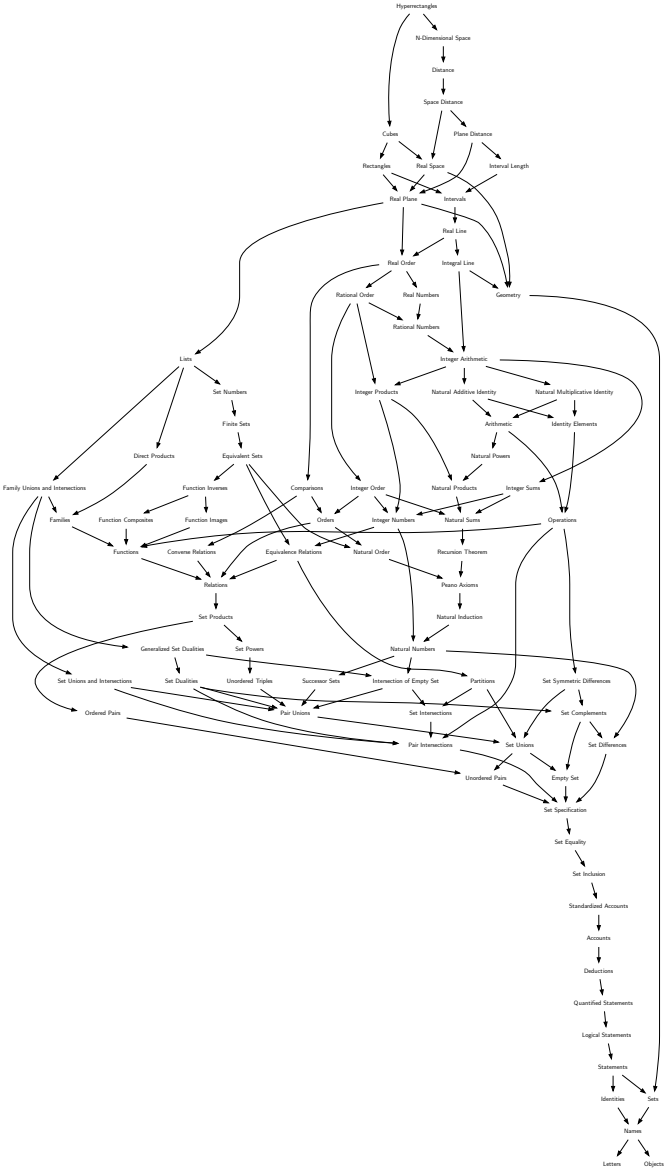
## Definition

Let $I : \{1, 2, \ldots, d\} \to \mathbf{R}$ be a family of $d$ intervals. A *hyperrectangle* is the set $\prod_{i=1}^{d} I_i$.[1]

As a result of this definition, an interval, a rectangle, and a cube are all hyperrectangles. Of course, in our definition we include four, five, and "dimensional" rectangles.

As with intervals, rectangles, and cubes, we call a hyperrectangle open, closed, left-open, right-open accordingly.

[1] Some authors use the term rectangle or *n-dimensional rectangle*. Some authors use the term *box* or *n-box*.


Hypercubes
N-Dimensional Space
Distance
Space Distance
Cubes
Plane Distance
Rectangles
Real Space
Interval Length
Real Plane
Intervals
Real Line
Real Order
Integral Line
Rational Order
Real Numbers
Geometry
Rational Numbers
Lists
Integer Arithmetic
Set Numbers
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Arithmetic
Identity Elements
Finite Sets
Direct Products
Equivalent Sets
Natural Powers
Family Unions and Intersections
Function Inverses
Comparisons
Integer Order
Natural Products
Integer Sums
Families
Function Composites
Function Images
Orders
Integer Numbers
Natural Sums
Operations
Functions
Converse Relations
Equivalence Relations
Natural Order
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Unions and Intersections
Set Dualities
Unordered Triples
Successor Sets
Intersection of Empty Set
Partitions
Set Symmetric Differences
Pair Unions
Set Intersections
Set Complements
Ordered Pairs
Pair Intersections
Set Unions
Set Differences
Unordered Pairs
Empty Set
Set Specification
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects