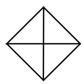


Why

We are constantly thinking of $\mathbf{R}^3$ as points of space.[1]

Definition

We commonly associate elements of $\mathbf{R}^3$ with points in space. (see Geometry).

Principle 1 (Plane Sets)**.** *There exists a set of all planes.*

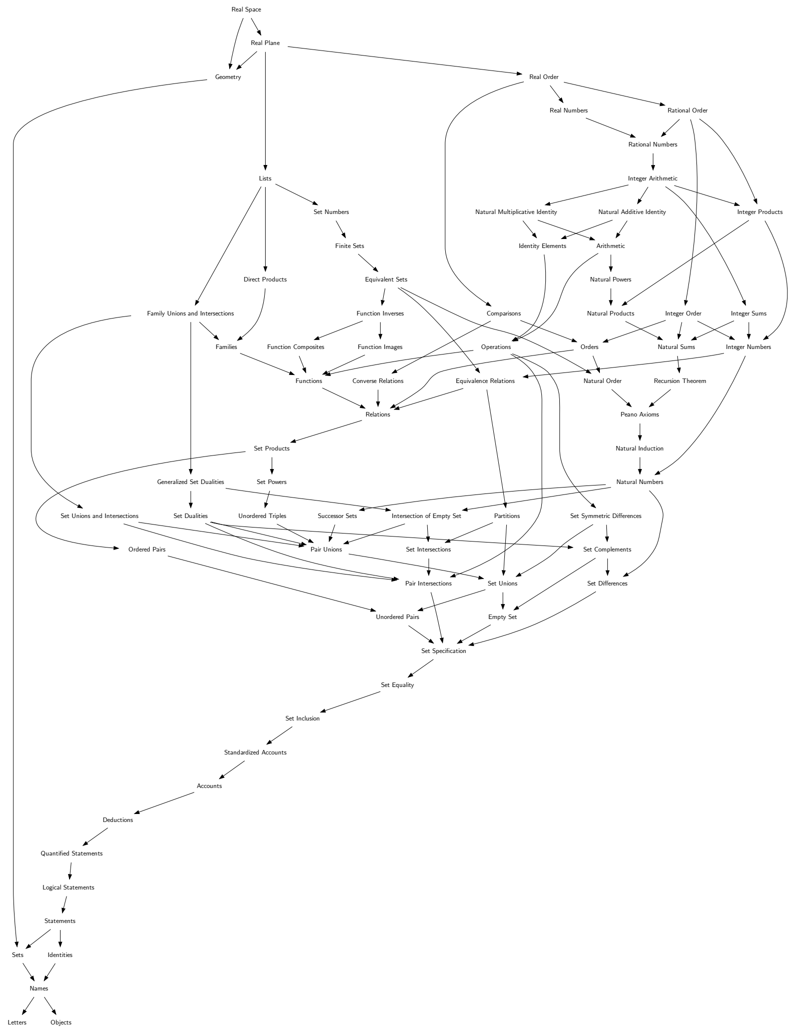
Principle 2 (Real Space Correspondence)**.** *Let P be the set of all planes of space. Then $\cup P$ is the set of all lines and $\cup\cup P$ is the set of all points. There exists a one-to-one correspondence mapping elements of $\cup\cup P$ onto elements of $\mathbf{R}^3$.*

For this reason, we sometimes call elements of $\mathbf{R}^3$ *points*. We call the point associated with $(0, 0, 0)$ the *origin*. We call the element of $\mathbf{R}^3$ which corresponds to a point the *coordinates* of the point.

Visualization

To visualize the correspondence we draw three perpendicular lines. We call these *axes*. We then associate a point of the line with $(0, 0, 0) \in \mathbf{R}^3$. We can label it so. We then pick a unit length. And proceed as usual.[2]

[1] Future editions will modify this sheet.
[2] Future editions will expand this.


Real Space
Real Plane
Geometry
Real Order
Real Numbers
Rational Order
Rational Numbers
Integer Arithmetic
Lists
Set Numbers
Natural Multiplicative Identity
Natural Additive Identity
Integer Products
Finite Sets
Identity Elements
Arithmetic
Direct Products
Equivalent Sets
Natural Powers
Family Unions and Intersections
Function Inverses
Comparisons
Natural Products
Integer Order
Integer Sums
Families
Function Composites
Function Images
Operations
Orders
Natural Sums
Integer Numbers
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
Ordered Pairs
Pair Unions
Set Intersections
Set Complements
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
Sets
Identities
Names
Letters
Objects