Why

We want language for recording the elements of some set that appear at regular intervals of time.

Definition

Let A be a set. An *observation sequence* (or *time series*) in A is a mapping $a : \mathbf{Z} \to A$. Often $A = \mathbf{R}^d$ in which case we call a a *vector-valued observation sequence* or *vector-valued time series*.

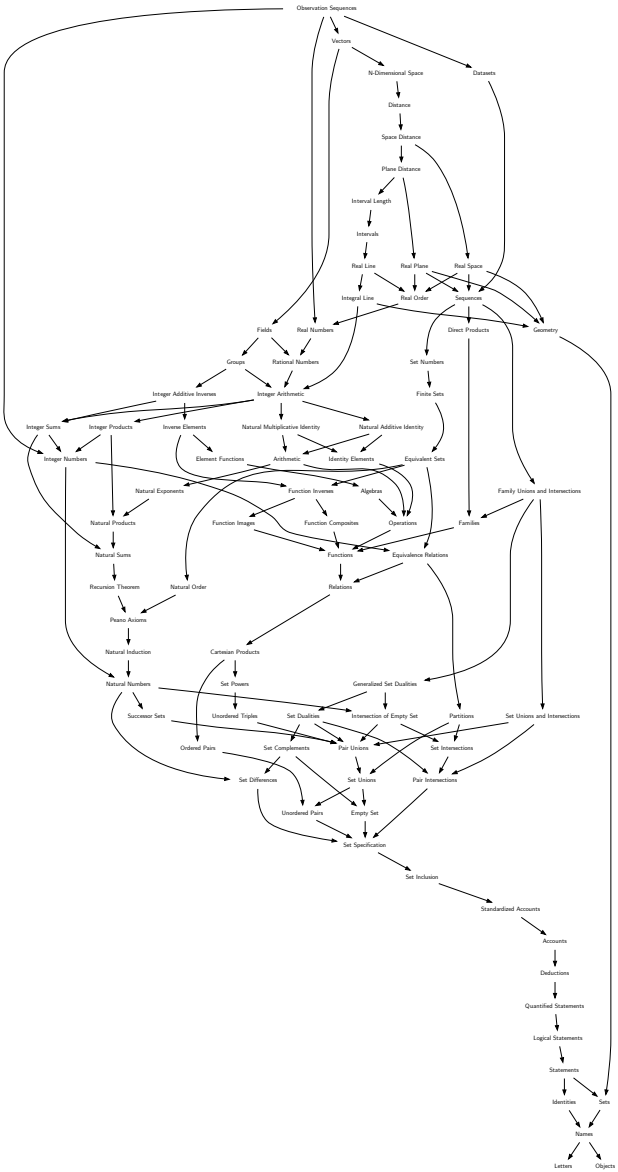
Examples

Examples include temperature readings, seismograph readings, sunspot numbers, export quantities, and so on.

Time invariance

The most basic assumption we can make is that the observation sequence a exhibits some regularity over time. This assumption is naturally related to the assumption of time-invariance in physical laws.[1]

[1] Future editions will expand on this discussion.


Observation Sequences
Vectors
N-Dimensional Space
Datasets
Distance
Space Distance
Plane Distance
Interval Length
Intervals
Real Line
Real Plane
Real Space
Integral Line
Real Order
Sequences
Fields
Real Numbers
Direct Products
Geometry
Groups
Rational Numbers
Set Numbers
Integer Additive Inverses
Integer Arithmetic
Finite Sets
Integer Sums
Integer Products
Inverse Elements
Natural Multiplicative Identity
Natural Additive Identity
Integer Numbers
Element Functions
Arithmetic
Identity Elements
Equivalent Sets
Natural Exponents
Function Inverses
Algebras
Family Unions and Intersections
Natural Products
Function Images
Function Composites
Operations
Families
Natural Sums
Functions
Equivalence Relations
Recursion Theorem
Natural Order
Relations
Peano Axioms
Natural Induction
Cartesian Products
Natural Numbers
Set Powers
Generalized Set Dualities
Successor Sets
Unordered Triples
Set Dualities
Intersection of Empty Set
Partitions
Set Unions and Intersections
Ordered Pairs
Set Complements
Pair Unions
Set Intersections
Set Differences
Set Unions
Pair Intersections
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects