## Why

We want to represent elements of the set of real numbers as digital data.

## Definition

A *floating point representation* is a bit string.[1]

### Notation

In this context, `float32` is another name for the set of length 32 bit strings and `float64` is another name for the set of length 64 bit strings.

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[1] Future editions will expand.

Floating Point Representations

Digital Integers

Real Order

Digital Naturals

Real Numbers
Rational Order

Bit Strings

Rational Numbers

Sequences

Integer Arithmetic

Set Numbers

Natural Multiplicative Identity
Natural Additive Identity
Integer Products

Direct Products
Finite Sets

Arithmetic
Identity Elements

Equivalent Sets

Natural Powers
Operations

Family Unions and Intersections
Function Inverses
Integer Sums
Natural Products
Integer Order
Comparisons

Families
Function Composites
Function Images
Natural Sums
Integer Numbers
Orders
Converse Relations

Functions
Natural Order
Recursion Theorem
Equivalence Relations

Peano Axioms
Relations

Natural Induction
Set Products

Generalized Set Dualities
Natural Numbers
Set Powers

Set Unions and Intersections
Set Dualities
Intersection of Empty Set
Successor Sets
Unordered Triples
Partitions

Set Complements
Pair Unions
Set Intersections
Ordered Pairs

Pair Intersections
Set Differences
Set Unions

Empty Set
Unordered Pairs

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities
Sets

Names

Letters
Objects

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