#### Why

We extend modular arithmetic to the real numbers.

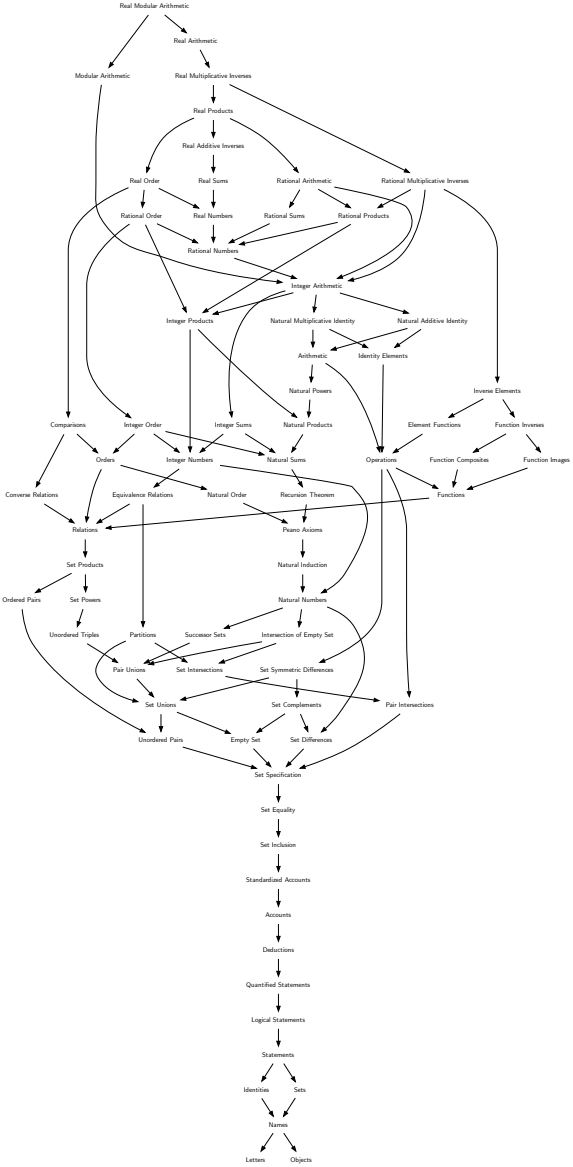
#### Definition

Two real numbers $x, y \in \mathbf{R}$ are congruent modulo $\alpha \in \mathbf{R}$ if their difference is a multiple of $\alpha$

#### Notation

For $x, y \in \mathbf{R}$, if $x$ and $y$ are congruent modulo $\alpha \in \mathbf{R}$ we write

$$x \equiv y( \mod \alpha)$$


Real Modular Arithmetic
Real Arithmetic
Modular Arithmetic
Real Multiplicative Inverses
Real Products
Real Additive Inverses
Real Order
Real Sums
Rational Arithmetic
Rational Multiplicative Inverses
Rational Order
Real Numbers
Rational Sums
Rational Products
Rational Numbers
Integer Arithmetic
Integer Products
Natural Multiplicative Identity
Natural Additive Identity
Arithmetic
Identity Elements
Natural Powers
Inverse Elements
Comparisons
Integer Order
Integer Sums
Natural Products
Element Functions
Function Inverses
Orders
Integer Numbers
Natural Sums
Operations
Function Composites
Function Images
Converse Relations
Equivalence Relations
Natural Order
Recursion Theorem
Functions
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 Intersections
Set Symmetric Differences
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