**Why**

We name a function which preserves algebraic structure.

**Definition**

A *group homomorphism* between two groups $(A, +)$ and $(B, \tilde{+})$ is a bijection $f : A \rightarrow B$ such that $f(1_A) = 1_B$ for $1_A \in A$ and $1_B \in B$ and $f(a + a') = f(a) \tilde{+} f(a')$ for all $a, a' \in A$. We define a *ring homomorphism* and *field homomorphism* similarly.

Homomorphisms

Fields    Groups

Rational Numbers    Rings

Integer Arithmetic    Finite Sets

Natural Multiplicative Identity    Natural Additive Identity

Arithmetic    Identity Elements

Integer Products    Natural Powers    Equivalent Sets

Integer Sums    Natural Products    Function Inverses

Integer Numbers    Natural Sums    Operations    Function Composites    Function Images

Recursion Theorem    Natural Order    Equivalence Relations    Functions

Peano Axioms    Relations

Natural Induction    Set Products

Natural Numbers    Set Powers    Ordered Pairs

Successor Sets    Unordered Triples    Intersection of Empty Set    Partitions

Set Symmetric Differences    Pair Unions    Set Intersections

Set Complements    Set Unions    Pair Intersections

Set Differences    Empty Set    Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities    Sets

Names

Letters    Objects