Why

We want to solve equations with squares.

Definition

Let m be a square number. We want to find n to satisfy

$$n^2 = m.$$

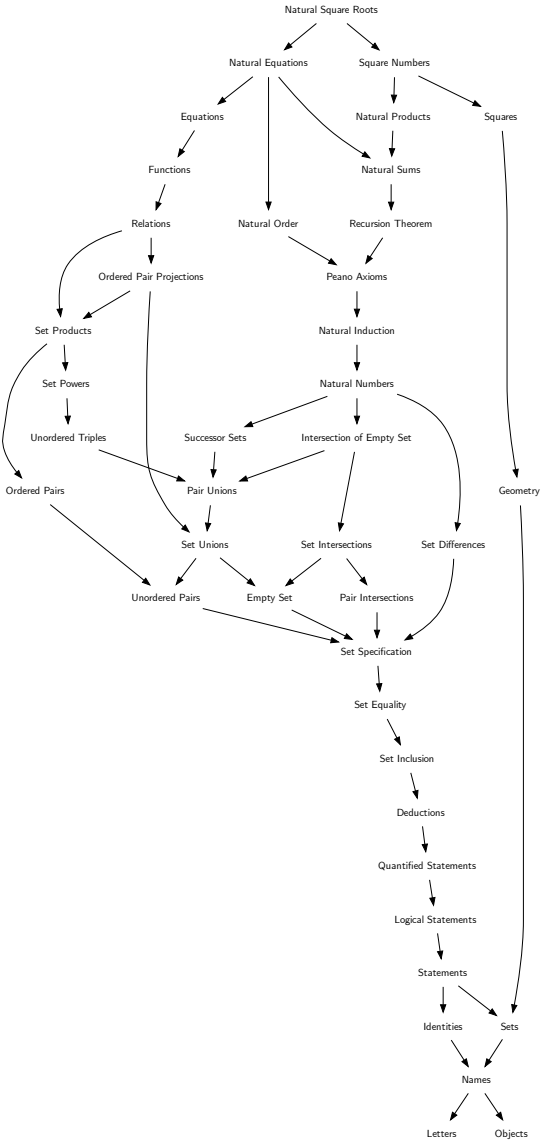
We call such an n a *square root* of m.

Proposition 1. *The square root of a square number is unique.*

This result motivates defininining a function the *square root function* which square numbers to their roots.

Notation

Let $S \subset \mathbf{N}$ denote the set of square numbers. Let $f : S \to N$ be the function such that $f(s)$ is the square root of s. We denote the result of f on n by $\sqrt{n}$.


Natural Square Roots
Natural Equations
Square Numbers
Equations
Natural Products
Squares
Functions
Natural Sums
Relations
Natural Order
Recursion Theorem
Ordered Pair Projections
Peano Axioms
Set Products
Natural Induction
Set Powers
Natural Numbers
Unordered Triples
Successor Sets
Intersection of Empty Set
Ordered Pairs
Pair Unions
Geometry
Set Unions
Set Intersections
Set Differences
Unordered Pairs
Empty Set
Pair Intersections
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
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Statements
Identities
Sets
Names
Letters
Objects