Why

We can think of combining vectors as sequential displacement.

Visualization

If you have never seen this before, it is worth staring at the following figure for some time.

Plane Vector Sums and Differences

Plane Vectors

Real Plane

Real Order

Rational Order   Real Numbers

Rational Numbers

Lists

Integer Arithmetic

Set Numbers   Direct Products

Integer Products   Natural Multiplicative Identity   Natural Additive Identity

Finite Sets

Arithmetic   Identity Elements

Equivalent Sets

Comparisons   Integer Order   Integer Sums

Natural Powers

Function Inverses   Family Unions and Intersections

Orders   Integer Numbers   Natural Products

Operations   Function Composites   Function Images   Families

Converse Relations

Natural Sums   Natural Order   Equivalence Relations   Functions

Relations   Recursion Theorem

Ordered Pair Projections

Peano Axioms

Set Products

Natural Induction

Set Powers   Natural Numbers   Generalized Set Dualities

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

Ordered Pairs   Pair Unions   Set Complements   Set Intersections

Set Unions   Set Differences   Pair Intersections

Unordered Pairs   Empty Set

Geometry   Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Sets   Identities

Names

Letters   Objects

4