## Why

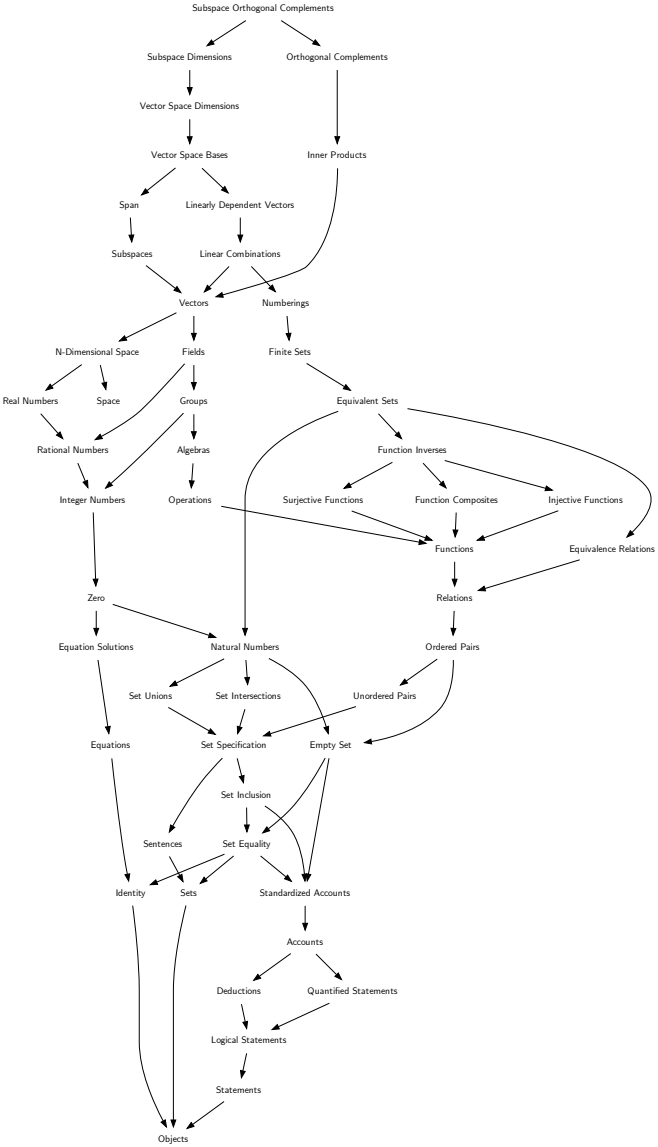
## Main Result

Proposition **1.** *The orthogonal complement of a subspace is a subspace.*

Proposition **2.** *Let $L \subset \mathbf{R}^n$ be a subspace. Then*

$$\dim L + \dim L^{\perp} = n.$$

Proposition **3.** *Let $b_1, \ldots, b_m$ be a basis for a subspace $L \subset \mathbf{R}^n$. Then $x \perp L$ if and only if $x \perp b_i$ for $i = \{1, 2, \ldots, m\}$.*


Subspace Orthogonal Complements
Subspace Dimensions
Orthogonal Complements
Vector Space Dimensions
Vector Space Bases
Inner Products
Span
Linearly Dependent Vectors
Subspaces
Linear Combinations
Vectors
Numberings
N-Dimensional Space
Fields
Finite Sets
Real Numbers
Space
Groups
Equivalent Sets
Rational Numbers
Algebras
Function Inverses
Integer Numbers
Operations
Surjective Functions
Function Composites
Injective Functions
Functions
Equivalence Relations
Zero
Relations
Equation Solutions
Natural Numbers
Ordered Pairs
Set Unions
Set Intersections
Unordered Pairs
Equations
Set Specification
Empty Set
Set Inclusion
Sentences
Set Equality
Identity
Sets
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Objects