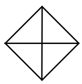


## Why

We want to talk about the size of a set.

## Definition

Two sets are *equivalent* if there exists a bijection between them.

PROPOSITION **1.** *Set equivalence in the sense defined above is an equivalence relation in the power set of a set.*

PROPOSITION **2.** *Every proper subset of a natural number is equivalent to some smaller natural number.*

*Proof.* TODO induction □

TODO: smaller defined?

PROPOSITION **3.** *A set can be equivalent to a proper subset of itself.*

Halmos' example here is not a bijection, though...

PROPOSITION **4.** *If $n$ is a natural number, then $n$ is not equivalent ot a proper subset of itself.*

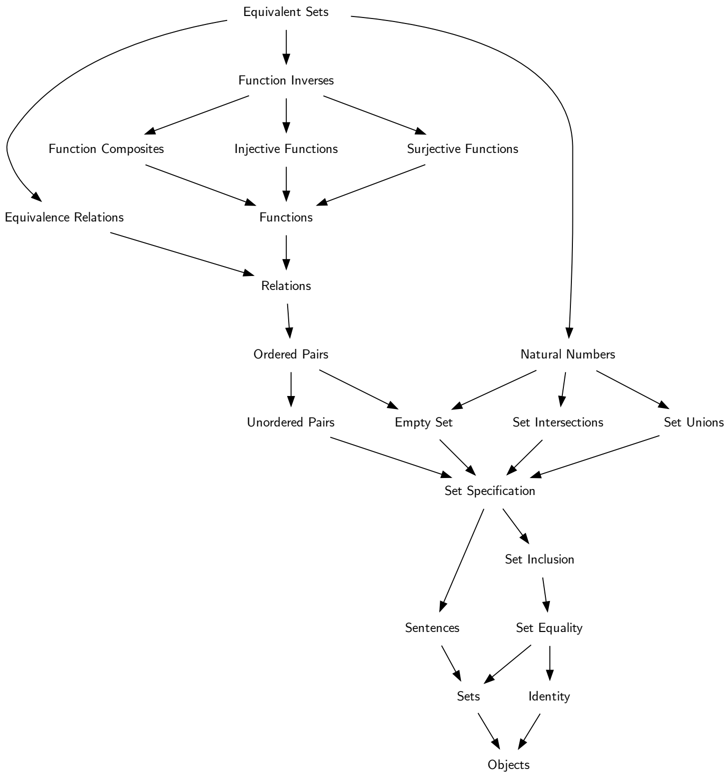
PROPOSITION **5.** *A set can be equivalent to at most one natural number.*

PROPOSITION **6.** *The set of natural numbers is infinite.*

PROPOSITION **7.** *A finite set is never equivalent to a proper subset of itself.*

Proposition **8.** *Every subset of a finite set is finite.*

Proposition **9.** *Every subset of a natural number is equivalent to a natural number.*


Equivalent Sets
Function Inverses
Function Composites
Injective Functions
Surjective Functions
Equivalence Relations
Functions
Relations
Ordered Pairs
Natural Numbers
Unordered Pairs
Empty Set
Set Intersections
Set Unions
Set Specification
Set Inclusion
Sentences
Set Equality
Sets
Identity
Objects