Definition

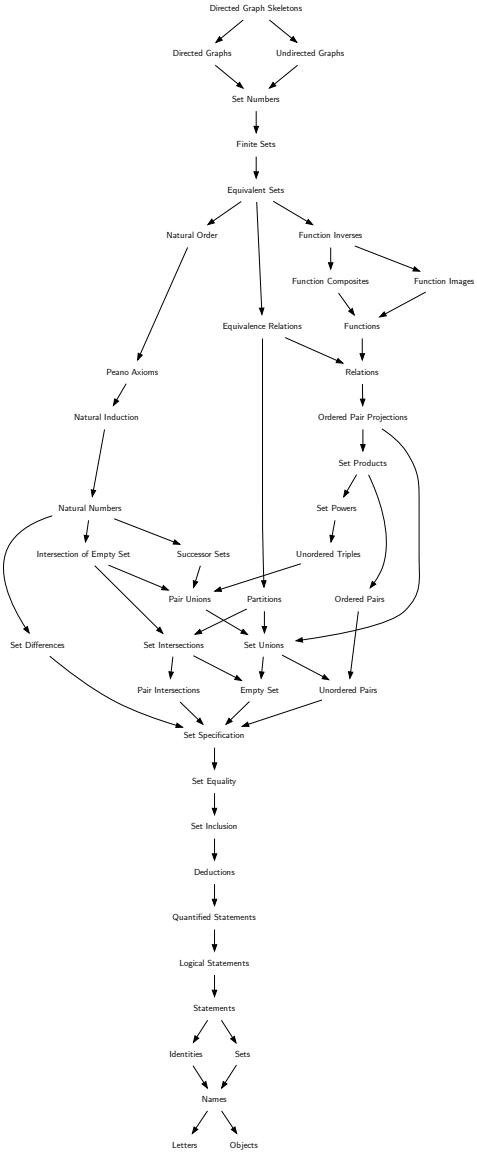
The *skeleton* of the directed graph (V, E) is the undirected graph (V, F) where

$$F = \{\{v, w\} \subset V \mid (v, w) \in E \text{ or } (w, v) \in E\}.$$

In other words, the skeleton is an undirected graph whose vertex set is V and whose edges are all (unordered) pairs which appear as an ordered pair in the directed graph.

In the case that (V, E) is a directed graph and E is a symmetric relation, the skeleton of (V, E) is a natural undirected graph to associate with (V, E). An *orientation* of an undirected graph G is a directed graph whose skeleton is G.

An *oriented graph* is a directed graph without self-loops satisfying the property for any two vertices x and y, either (x, y) or (y, x) is an edge, but not both. An oriented graph can be obtained from an undirected graph by selecting an "orientation" of the undirected edges.


Directed Graph Skeletons
Directed Graphs
Undirected Graphs
Set Numbers
Finite Sets
Equivalent Sets
Natural Order
Function Inverses
Function Composites
Function Images
Equivalence Relations
Functions
Peano Axioms
Relations
Natural Induction
Ordered Pair Projections
Set Products
Natural Numbers
Set Powers
Intersection of Empty Set
Successor Sets
Unordered Triples
Pair Unions
Partitions
Ordered Pairs
Set Differences
Set Intersections
Set Unions
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects