Index

Δ-system, 290
Comprehension Schema, 366
λ-chain condition, 282
λ-closed, 286
Choice, 53
Comprehension Schema, 16
Extensionality, 16, 113
Foundation, 14
Pairing, 18
Power Set, 61
Power Set Axiom, 61
Replacement Schema, 14, 20
Set Existence, 16
AC, 53

absolute, 129
absoluteness, 129
addition, 40, 65
antichain, 55, 227
arithmetic, 143, 146
arithmetical hierarchy, 181
atom, 365
automorphism, 301, 302, 327, 368
axiom of **Choice**, 53
axiom of **Foundation**, 97
axiom of Constructibility, 213
Axioms, 13

Baire Category Theorem, 85
basic Fraenkel model, 376
Beth hierarchy, 76
bijection, 23
bijective, 23
binary relation, 21
bounded formula, 180

c.c.c., 282, 291, 296
canonical $\mathbb{P}$-names, 245
canonical names, 245
canonical tree representation of a well-founded set, 94
Cantor Normal Form, 44
Cantor's Theorem, 61
Cantor-Schröder-Bernstein Theorem, 57
cardinal, 59
cardinal addition, 65, 68
cardinal exponentiation, 66, 68, 69
cardinal hierarchy, 63
cardinal multiplication, 65, 67–69
cardinal number, 59
cardinal of a set (**ZFC**), 58
cardinal preservation, 281, 282, 286, 292, 296
cartesian product, 21
chain, 55
child, 83
choice function, 54, 405
class, 38
cofinal, 72
cofinality, 72
Cohen, 293, 352
Cohen forcing, 293, 297
collapse, 112
comparable, 227

compatibility, 227
compatible, 227
complete, 176
complete theory, 176
composition, 143, 144
computable, 145
concatenation, 82
conservative extension, 51
conservative extension by definition, 51
consistency, 107, 113, 143
consistency of **ZF**, 143
consistent, 176
consistent theory, 176
constant, 143
constructible set, 197
Continuum Hypothesis, 76
countable, 60
countable chain condition, 282
cumulative hierarchy, 99

decidability, 175
decidable, 176
decidable theory, 175, 176
Dedekind-finite, 313, 405
Dedekind-infinite, 313
definability, 193
definable subsets, 193
dense, 227
dense below, 233
dense subset, 228
division, 42
domain, 21

elmentary submodel, 214
empty sequence, 83
empty set, 17
Euclidean division, 42
exponentiation, 43, 66
extension by definition, 46
extensional class-relation, 113

falsifying König Lemma, 405
Feferman, 341, 357
filter, 228, 330, 369
finite, 60
forcing, 226, 251, 253
forcing from inside **M**, 253
forcing from inside **V**, 251
forcing $2^{\aleph_0} = \aleph_2$, 289
forcing $2^{\aleph_0} = \aleph_{\alpha+1}$, 296, 297
forcing $\neg$**AC**, 306
forcing condition, 226
Fraenkel, 376, 379
function, 22

Gödel, 150, 179, 186, 188
Gödel number, 150
Gödel's Constructible Universe, 197
Gödel's first incompleteness theorem, 179
Gödel's second incompleteness theorem, 186, 188
Generalized Continuum Hypothesis, 76
generic extension, 240
generic filter, 228
genericity, 228

Hartogs' Lemma, 315
height, 95
height of a tree, 93
hereditarily ordinal definable set, 305
hereditarily symmetric $\mathbb{P}$-name, 330
hereditarily symmetric set, 370
holds in, 106

inaccessible cardinal, 78
incompatible, 227
incomplete theory, 179
independence of **CH**, 289
inductive partial order, 55
infimum, 36
infinite, 60
infinite branch, 83
injection, 23
injective, 23
inner model, 218
integer, 38

intersection, 20
inverse, 22
inverse relation, 22
irreflexivity, 23
isomorphic, 24

Jech, 188, 391
Jech's Proof of Gödel's Second Incompleteness Theorem for Set Theory, 188
Jech-Sochor Embedding Theorem, 391

König Lemma, 382
König's Lemma, 75
kernel, 367
Kuratowski-Zorn's Lemma, 55

leaf, 83
length (of a sequence), 82
Levy, 341
Levy forcing, 341
limit cardinal, 63
limit ordinal, 37

minimisation, 144
minimization, 145
model, 106
Montague's Reflection Principle, 223
Mostowski, 384
Mostowski collapse, 112
Mostowski Collapsing Theorem, 115
multiplication, 41, 65

n.e.p., 84
non-empty pruned tree, 84
normal filter, 330, 369
notion of forcing, 226

omega, 38
order isomorphism, 24
order type, 35
ordered Mostowski model, 384
ordered pair, 19
ordering, 23
ordinal, 31
ordinal addition, 40
ordinal exponentiation, 43
ordinal multiplication, 41
ordinal number, 29

pair, 18
partial ordering, 23
partial recursive function, 143
Peano, 180
Peano arithmetic, 180
permutation, 368
permutation model, 373, 391
permutation normal filter, 369
poset, 226, 227
predecessors, 24
primitive recursive, 145
primitive recursive function, 145
principal ultrafilter, 357
projection, 143
proper class, 38

range, 21
rank, 79, 95, 197, 223
recursion, 143, 144
recursive extension of $T \supseteq \mathcal{R}ob. + I\Sigma_1^0$, 186
recursive extension of $\mathcal{R}ob.$, 179
recursive theory, 175
recursively enumerable, 176
reflection, 223
regular cardinal, 74
relation, 21
relativization, 105
representable, 147
representable function, 147
representable set, 147
Robinson, 146
Robinson arithmetic, 146
root, 83
Russell's paradox, 17

second Fraenkel model, 379
semantic truth, 106

sequence, 82
sequent calculus, 157
set difference, 20
set of atoms, 365
set theory with atoms, 365
set-like, 109
simulating permutation models by symmetric models, 391
singular cardinal, 74
Sochor, 391
strong antichain, 227
stronger, 226
strongly inaccessible cardinal, 78
successor, 37, 143
successor cardinal, 62, 63
successor function, 143
successor ordinal, 37
supremum, 35
surjection, 23
surjective, 23
symmetric, 370
symmetric $\mathbb{P}$-name, 330
symmetric model, 391
symmetric set, 370
symmetric submodel, 332
symmetry group, 328, 370

total, 176
total ordering, 23
total recursive, 147
total recursive function, 147
transfinite induction, 39
transfinite recursion, 39
transitive closure, 96
transitive set, 30
transitivity, 23
tree, 83
trivial ultrafilter, 357
Truth Lemma, 269
Turing computable, 145
type, 35

ultrafilter, 357
unbounded, 71, 72
uncountable, 60
undecidability of first order logic, 179
undecidable, 176
undecidable theory, 176
union, 19
Universal Set, 17
Universal Set of ordinal numbers, 33

von Neumann hierarchy, 99

weakly inaccessible cardinal, 78
well-founded class-relation, 109
well-founded relation, 88
well-founded sets, 79
well-ordering, 24

Zermelo's Theorem, 55
Zermelo-Fraenkel with Atoms, 365