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Mathematics Subject Classification 2010
Zentralblatt MATH

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81 Quantum theory
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83 Relativity and gravitational theory
85 Astronomy and astrophysics
86 Geophysics
90 Operations research, mathematical programming
91 Game theory, economics, social and behavioral sciences
92 Biology and other natural sciences
93 Systems theory, control
94 Information and communication, circuits
97 Mathematical education

This Mathematics Subject Classification was compiled by the Editorial O ces of both Mathematical Reviews and Zentralblatt MATH.

00-XX General

00-01 Instructional exposition (textbooks, tutorial papers, etc.)
00-02 Research exposition (monographs, survey articles)

00Axx General and miscellaneous specific topics
00A05 General mathematics
00A06 Mathematics for nonmathematicians (engineering, social sciences, etc.)
00A07 Problem books
00A08 Recreational mathematics [See also 97A20]
00A09 Popularization of mathematics
00A15 Bibliographies
00A17 External book reviews
00A20 Dictionaries and other general reference works
00A22 Formularies
00A30 Philosophy of mathematics [See also 03A05]
00A35 Methodology of mathematics, didactics [See also 97Cxx, 97Dxx]
00A65 Mathematics and music
00A66 Mathematics and visual arts, visualization
00A67 Mathematics and architecture
00A69 General applied mathematics (For physics, see 00A79 and Sections 70 through 86)
00A71 Theory of mathematical modeling
00A72 General methods of simulation
00A73 Dimensional analysis
00A79 Physics (use more specific entries from Sections 70 through 86 when possible)
00A99 Miscellaneous topics

00Bxx Conference proceedings and collections of papers
00B05 Collections of abstracts of lectures
00B10 Collections of articles of general interest
00B15 Collections of articles of miscellaneous specific content
00B20 Proceedings of conferences of general interest
00B25 Proceedings of conferences of miscellaneous specific interest
00B30 Festschriften
00B50 Volumes of selected translations
00B55 Miscellaneous volumes of translations
00B60 Collections of reprinted articles [See also 01A75]
00B99 None of the above, but in this section

01-XX History and biography [See also the classification number –03 in the other sections]

01-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
01-01 Instructional exposition (textbooks, tutorial papers, etc.)
01-02 Research exposition (monographs, survey articles)
01-06 Proceedings, conferences, collections, etc.
01-08 Computational methods

01Axx History of mathematics and mathematicians
01A05 General histories, source books
01A07 Ethnomathematics, general
01A10 Paleolithic, Neolithic
01A12 Indigenous cultures of the Americas
01A13 Other indigenous cultures (non-European)
01A15 Indigenous European cultures (pre-Greek, etc.)
01A16 Egyptian
01A17 Babylonian
01A20 Greek, Roman
01A25 China
01A27 Japan
01A29 Southeast Asia
01A30 Islam (Medieval)
01A32 India
01A35 Medieval
01A40 15th and 16th centuries, Renaissance
01A45 17th century
01A50 18th century
01A55 19th century
01A60 20th century
01A61 Twenty-first century
01A65 Contemporary
01A67 Future prospectives

01A70 Biographies, obituaries, personalia, bibliographies
01A72 Schools of mathematics
01A73 Universities
01A74 Other institutions and academies
01A75 Collected or selected works; reprintings or translations of classics [See also 00B60]
01A80 Sociology (and profession) of mathematics
01A85 Historiography
01A90 Bibliographic studies
01A99 Miscellaneous topics

03-XX Mathematical logic and foundations

03-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
03-01 Instructional exposition (textbooks, tutorial papers, etc.)
03-02 Research exposition (monographs, survey articles)
03-03 Historical (must also be assigned at least one classification number from Section 01)
03-04 Explicit machine computation and programs (not the theory of computation or programming)
03-06 Proceedings, conferences, collections, etc.

03Axx Philosophical aspects of logic and foundations
03A05 Philosophical and critical (For philosophy of mathematics, see also 00A30)
03A10 Logic in the philosophy of science
03A99 None of the above, but in this section

03Bxx General logic
03B05 Classical propositional logic
03B10 Classical first-order logic
03B15 Higher-order logic and type theory
03B20 Subsystems of classical logic (including intuitionistic logic)
03B22 Abstract deductive systems
03B25 Decidability of theories and sets of sentences [See also 11U05, 12L05, 20F10]
03B30 Foundations of classical theories (including reverse mathematics) [See also 03F35]
03B35 Mechanization of proofs and logical operations [See also 68T15]
03B40 Combinatory logic and lambda-calculus [See also 68N18]
03B42 Logics of knowledge and belief (including belief change)
03B44 Temporal logic
03B45 Modal logic (including the logic of norms) (For knowledge and belief, see 03B42; for temporal logic, see 03B44; for provability logic, see also 03F45)
03B47 Substructural logics (including relevance, entailment, linear logic, Lambek calculus, BCK and BCI logics) (For proof-theoretic aspects see 03F52)
03B48 Probability and inductive logic [See also 60A05]
03B50 Many-valued logic
03B52 Fuzzy logic; logic of vagueness [See also 68T27, 68T37, 94D05]
03B53 Paraconsistent logics
03B55 Intermediate logics
03B60 Other nonclassical logic
03B62 Combined logics
03B65 Logic of natural languages [See also 68T50, 91F20]
03B70 Logic in computer science [See also 68-XX]
03B80 Other applications of logic
03B99 None of the above, but in this section

03Cxx Model theory
03C05 Equational classes, universal algebra [See also 08Axx, 08Bxx, 18C05]
03C07 Basic properties of first-order languages and structures
03C10 Quantifier elimination, model completeness andrelated topics
03C13 Finite structures [See also 68Q15, 68Q19]
03C15 Denumerable structures
03C20 Ultraproducts and related constructions
03C25 Model-theoretic forcing
03C30 Other model constructions
03C35 Categoricity and completeness of theories
03C40 Interpolation, preservation, definability
03C45 Classification theory, stability and related concepts [See also 03C48]

03C48 Abstract elementary classes and related topics [See also 03C45]
03C50 Models with special properties (saturated, rigid, etc.)
03C52 Properties of classes of models
03C55 Set-theoretic model theory
03C57 E ective and recursion-theoretic model theory [See also 03D45]
03C60 Model-theoretic algebra [See also 08C10, 12Lxx, 13L05]
03C62 Models of arithmetic and set theory [See also 03Hxx]
03C64 Model theory of ordered structures; o-minimality
03C65 Models of other mathematical theories
03C68 Other classical first-order model theory
03C70 Logic on admissible sets
03C75 Other infinitary logic
03C80 Logic with extra quantifiers and operators [See also 03B42, 03B44, 03B45, 03B48]
03C85 Second- and higher-order model theory
03C90 Nonclassical models (Boolean-valued, sheaf, etc.)
03C95 Abstract model theory
03C98 Applications of model theory [See also 03C60]
03C99 None of the above, but in this section

03Dxx Computability and recursion theory
03D03 Thue and Post systems, etc.
03D05 Automata and formal grammars in connection with logical questions [See also 68Q45, 68Q70, 68R15]
03D10 Turing machines and related notions [See also 68Q05]
03D15 Complexity of computation (including implicit computational complexity) [See also 68Q15, 68Q17]
03D20 Recursive functions and relations, subrecursive hierarchies
03D25 Recursively (computably) enumerable sets and degrees
03D28 Other Turing degree structures
03D30 Other degrees and reducibilities
03D32 Algorithmic randomness and dimension [See also 68Q30]
03D35 Undecidability and degrees of sets of sentences
03D40 Word problems, etc. [See also 06B25, 08A50, 20F10, 68R15]
03D45 Theory of numerations, e ectively presented structures [See also 03C57; for intuitionistic and similar approaches see 03F55]
03D50 Recursive equivalence types of sets and structures, isols
03D55 Hierarchies
03D60 Computability and recursion theory on ordinals, admissible sets, etc.
03D65 Higher-type and set recursion theory
03D70 Inductive definability
03D75 Abstract and axiomatic computability and recursion theory
03D78 Computation over the reals (For constructive aspects, see 03F60)
03D80 Applications of computability and recursion theory
03D99 None of the above, but in this section

03Exx Set theory
03E02 Partition relations
03E04 Ordered sets and their cofinalities; pcf theory
03E05 Other combinatorial set theory
03E10 Ordinal and cardinal numbers
03E15 Descriptive set theory [See also 28A05, 54H05]
03E17 Cardinal characteristics of the continuum
03E20 Other classical set theory (including functions, relations, and set algebra)
03E25 Axiom of choice and related propositions
03E30 Axiomatics of classical set theory and its fragments
03E35 Consistency and independence results
03E40 Other aspects of forcing and Boolean-valued models
03E45 Inner models, including constructibility, ordinal definability, and core models
03E47 Other notions of set-theoretic definability
03E50 Continuum hypothesis and Martin's axiom [See also 03E57]
03E55 Large cardinals

03E57 Generic absoluteness and forcing axioms [See also 03E50]
03E60 Determinacy principles
03E65 Other hypotheses and axioms
03E70 Nonclassical and second-order set theories
03E72 Fuzzy set theory
03E75 Applications of set theory
03E99 None of the above, but in this section

03Fxx Proof theory and constructive mathematics
03F03 Proof theory, general
03F05 Cut-elimination and normal-form theorems
03F07 Structure of proofs
03F10 Functionals in proof theory
03F15 Recursive ordinals and ordinal notations
03F20 Complexity of proofs
03F25 Relative consistency and interpretations
03F30 First-order arithmetic and fragments
03F35 Second- and higher-order arithmetic and fragments [See also 03B30]
03F40 Gödel numberings and issues of incompleteness
03F45 Provability logics and related algebras (e.g., diagonalizable algebras) [See also 03B45, 03G25, 06E25]
03F50 Metamathematics of constructive systems
03F52 Linear logic and other substructural logics [See also 03B47]
03F55 Intuitionistic mathematics
03F60 Constructive and recursive analysis [See also 03B30, 03D45, 03D78, 26E40, 46S30, 47S30]
03F65 Other constructive mathematics [See also 03D45]
03F99 None of the above, but in this section

03Gxx Algebraic logic
03G05 Boolean algebras [See also 06Exx]
03G10 Lattices and related structures [See also 06Bxx]
03G12 Quantum logic [See also 06C15, 81P10]
03G15 Cylindric and polyadic algebras; relation algebras
03G20 Łukasiewicz and Post algebras [See also 06D25, 06D30]
03G25 Other algebras related to logic [See also 03F45, 06D20, 06E25, 06F35]
03G27 Abstract algebraic logic
03G30 Categorical logic, topoi [See also 18B25, 18C05, 18C10]
03G99 None of the above, but in this section

03Hxx Nonstandard models [See also 03C62]
03H05 Nonstandard models in mathematics [See also 26E35, 28E05, 30G06, 46S20, 47S20, 54J05]
03H10 Other applications of nonstandard models (economics, physics, etc.)
03H15 Nonstandard models of arithmetic [See also 11U10, 12L15, 13L05]
03H99 None of the above, but in this section

05-XX Combinatorics (For finite fields, see 11Txx)

05-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
05-01 Instructional exposition (textbooks, tutorial papers, etc.)
05-02 Research exposition (monographs, survey articles)
05-03 Historical (must also be assigned at least one classification number from Section 01)
05-04 Explicit machine computation and programs (not the theory of computation or programming)
05-06 Proceedings, conferences, collections, etc.

05Axx Enumerative combinatorics (For enumeration in graph theory, see 05C30)
05A05 Permutations, words, matrices
05A10 Factorials, binomial coe cients, combinatorial functions [See also 11B65, 33Cxx]
05A15 Exact enumeration problems, generating functions [See also 33Cxx, 33Dxx]
05A16 Asymptotic enumeration
05A17 Partitions of integers [See also 11P81, 11P82, 11P83]
05A18 Partitions of sets
05A19 Combinatorial identities, bijective combinatorics
05A20 Combinatorial inequalities

05A30 q-calculus and related topics [See also 33Dxx]
05A40 Umbral calculus
05A99 None of the above, but in this section

05Bxx Designs and configurations (For applications of design theory, see 94C30)
05B05 Block designs [See also 51E05, 62K10]
05B07 Triple systems
05B10 Di erence sets (number-theoretic, group-theoretic, etc.) [See also 11B13]
05B15 Orthogonal arrays, Latin squares, Room squares
05B20 Matrices (incidence, Hadamard, etc.)
05B25 Finite geometries [See also 51D20, 51Exx]
05B30 Other designs, configurations [See also 51E30]
05B35 Matroids, geometric lattices [See also 52B40, 90C27]
05B40 Packing and covering [See also 11H31, 52C15, 52C17]
05B45 Tessellation and tiling problems [See also 52C20, 52C22]
05B50 Polyominoes
05B99 None of the above, but in this section

05Cxx Graph theory (For applications of graphs, see 68R10, 81Q30, 81T15, 82B20, 82C20, 90C35, 92E10, 94C15)
05C05 Trees
05C07 Vertex degrees [See also 05E30]
05C10 Planar graphs; geometric and topological aspects of graph theory [See also 57M15, 57M25]
05C12 Distance in graphs
05C15 Coloring of graphs and hypergraphs
05C17 Perfect graphs
05C20 Directed graphs (digraphs), tournaments
05C21 Flows in graphs
05C22 Signed and weighted graphs
05C25 Graphs and abstract algebra (groups, rings, fields, etc.) [See also 20F65]
05C30 Enumeration in graph theory
05C31 Graph polynomials
05C35 Extremal problems [See also 90C35]
05C38 Paths and cycles [See also 90B10]
05C40 Connectivity
05C42 Density (toughness, etc.)
05C45 Eulerian and Hamiltonian graphs
05C50 Graphs and linear algebra (matrices, eigenvalues, etc.)
05C51 Graph designs and isomomorphic decomposition [See also 05B30]
05C55 Generalized Ramsey theory [See also 05D10]
05C57 Games on graphs [See also 91A43, 91A46]
05C60 Isomorphism problems (reconstruction conjecture, etc.) and homomorphisms (subgraph embedding, etc.)
05C62 Graph representations (geometric and intersection representations, etc.) (For graph drawing, see also 68R10)
05C63 Infinite graphs
05C65 Hypergraphs
05C69 Dominating sets, independent sets, cliques
05C70 Factorization, matching, partitioning, covering and packing
05C72 Fractional graph theory, fuzzy graph theory
05C75 Structural characterization of families of graphs
05C76 Graph operations (line graphs, products, etc.)
05C78 Graph labelling (graceful graphs, bandwidth, etc.)
05C80 Random graphs [See also 60B20]
05C81 Random walks on graphs
05C82 Small world graphs, complex networks [See also 90Bxx, 91D30]
05C83 Graph minors
05C85 Graph algorithms [See also 68R10, 68W05]
05C90 Applications [See also 68R10, 81Q30, 81T15, 82B20, 82C20, 90C35, 92E10, 94C15]
05C99 None of the above, but in this section

05Dxx Extremal combinatorics
05D05 Extremal set theory
05D10 Ramsey theory [See also 05C55]
05D15 Transversal (matching) theory
05D40 Probabilistic methods

05D99 None of the above, but in this section

05Exx Algebraic combinatorics
05E05 Symmetric functions and generalizations
05E10 Combinatorial aspects of representation theory [See also 20C30]
05E15 Combinatorial aspects of groups and algebras [See also 14Nxx, 22E45, 33C80]
05E18 Group actions on combinatorial structures
05E30 Association schemes, strongly regular graphs
05E40 Combinatorial aspects of commutative algebra
05E45 Combinatorial aspects of simplicial complexes
05E99 None of the above, but in this section

06-XX Order, lattices, ordered algebraic structures [See also 18B35]

06-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
06-01 Instructional exposition (textbooks, tutorial papers, etc.)
06-02 Research exposition (monographs, survey articles)
06-03 Historical (must also be assigned at least one classification number from Section 01)
06-04 Explicit machine computation and programs (not the theory of computation or programming)
06-06 Proceedings, conferences, collections, etc.

06Axx Ordered sets
06A05 Total order
06A06 Partial order, general
06A07 Combinatorics of partially ordered sets
06A11 Algebraic aspects of posets
06A12 Semilattices [See also 20M10; for topological semilattices see 22A26]
06A15 Galois correspondences, closure operators
06A75 Generalizations of ordered sets
06A99 None of the above, but in this section

06Bxx Lattices [See also 03G10]
06B05 Structure theory
06B10 Ideals, congruence relations
06B15 Representation theory
06B20 Varieties of lattices
06B23 Complete lattices, completions
06B25 Free lattices, projective lattices, word problems [See also 03D40, 08A50, 20F10]
06B30 Topological lattices, order topologies [See also 06F30, 22A26, 54F05, 54H12]
06B35 Continuous lattices and posets, applications [See also 06B30, 06D10, 06F30, 18B35, 22A26, 68Q55]
06B75 Generalizations of lattices
06B99 None of the above, but in this section

06Cxx Modular lattices, complemented lattices
06C05 Modular lattices, Desarguesian lattices
06C10 Semimodular lattices, geometric lattices
06C15 Complemented lattices, orthocomplemented lattices and posets [See also 03G12, 81P10]
06C20 Complemented modular lattices, continuous geometries
06C99 None of the above, but in this section

06Dxx Distributive lattices
06D05 Structure and representation theory
06D10 Complete distributivity
06D15 Pseudocomplemented lattices
06D20 Heyting algebras [See also 03G25]
06D22 Frames, locales (For topological questions see 54-XX)
06D25 Post algebras [See also 03G20]
06D30 De Morgan algebras, Łukasiewicz algebras [See also 03G20]
06D35 MV-algebras
06D50 Lattices and duality
06D72 Fuzzy lattices (soft algebras) and related topics
06D75 Other generalizations of distributive lattices
06D99 None of the above, but in this section

06Exx Boolean algebras (Boolean rings) [See also 03G05]
06E05 Structure theory
06E10 Chain conditions, complete algebras
06E15 Stone spaces (Boolean spaces) and related structures
06E20 Ring-theoretic properties [See also 16E50, 16G30]
06E25 Boolean algebras with additional operations (diagonalizable algebras, etc.) [See also 03G25, 03F45]
06E30 Boolean functions [See also 94C10]
06E75 Generalizations of Boolean algebras
06E99 None of the above, but in this section

06Fxx Ordered structures
06F05 Ordered semigroups and monoids [See also 20Mxx]
06F07 Quantales
06F10 Noether lattices
06F15 Ordered groups [See also 20F60]
06F20 Ordered abelian groups, Riesz groups, ordered linear spaces [See also 46A40]
06F25 Ordered rings, algebras, modules (For ordered fields, see 12J15; see also 13J25, 16W80)
06F30 Topological lattices, order topologies [See also 06B30, 22A26, 54F05, 54H12]
06F35 BCK-algebras, BCI-algebras [See also 03G25]
06F99 None of the above, but in this section

08-XX General algebraic systems

08-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
08-01 Instructional exposition (textbooks, tutorial papers, etc.)
08-02 Research exposition (monographs, survey articles)
08-03 Historical (must also be assigned at least one classification number from Section 01)
08-04 Explicit machine computation and programs (not the theory of computation or programming)
08-06 Proceedings, conferences, collections, etc.

08Axx Algebraic structures [See also 03C05]
08A02 Relational systems, laws of composition
08A05 Structure theory
08A30 Subalgebras, congruence relations
08A35 Automorphisms, endomorphisms
08A40 Operations, polynomials, primal algebras
08A45 Equational compactness
08A50 Word problems [See also 03D40, 06B25, 20F10, 68R15]
08A55 Partial algebras
08A60 Unary algebras
08A62 Finitary algebras
08A65 Infinitary algebras
08A68 Heterogeneous algebras
08A70 Applications of universal algebra in computer science
08A72 Fuzzy algebraic structures
08A99 None of the above, but in this section

08Bxx Varieties [See also 03C05]
08B05 Equational logic, Mal'cev (Mal'tsev) conditions
08B10 Congruence modularity, congruence distributivity
08B15 Lattices of varieties
08B20 Free algebras
08B25 Products, amalgamated products, and other kinds of limits and colimits [See also 18A30]
08B26 Subdirect products and subdirect irreducibility
08B30 Injectives, projectives
08B99 None of the above, but in this section

08Cxx Other classes of algebras
08C05 Categories of algebras [See also 18C05]
08C10 Axiomatic model classes [See also 03Cxx, in particular 03C60]
08C15 Quasivarieties
08C20 Natural dualities for classes of algebras [See also 06E15, 18A40, 22A30]
08C99 None of the above, but in this section

11-XX Number theory

11-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
11-01 Instructional exposition (textbooks, tutorial papers, etc.)
11-02 Research exposition (monographs, survey articles)
11-03 Historical (must also be assigned at least one classification number from Section 01)
11-04 Explicit machine computation and programs (not the theory of computation or programming)
11-06 Proceedings, conferences, collections, etc.

11Axx Elementary number theory (For analogues in number fields, see 11R04)
11A05 Multiplicative structure; Euclidean algorithm; greatest common divisors
11A07 Congruences; primitive roots; residue systems
11A15 Power residues, reciprocity
11A25 Arithmetic functions; related numbers; inversion formulas
11A41 Primes
11A51 Factorization; primality
11A55 Continued fractions (For approximation results, see 11J70) [See also 11K50, 30B70, 40A15]
11A63 Radix representation; digital problems (For metric results, see 11K16)
11A67 Other representations
11A99 None of the above, but in this section

11Bxx Sequences and sets
11B05 Density, gaps, topology
11B13 Additive bases, including sumsets [See also 05B10]
11B25 Arithmetic progressions [See also 11N13]
11B30 Arithmetic combinatorics; higher degree uniformity
11B34 Representation functions
11B37 Recurrences (For applications to special functions, see 33-XX)
11B39 Fibonacci and Lucas numbers and polynomials and generalizations
11B50 Sequences (mod m)
11B57 Farey sequences; the sequences $1^k, 2^k, \ldots$
11B65 Binomial coefficients; factorials; q-identities [See also 05A10, 05A30]
11B68 Bernoulli and Euler numbers and polynomials
11B73 Bell and Stirling numbers
11B75 Other combinatorial number theory
11B83 Special sequences and polynomials
11B85 Automata sequences
11B99 None of the above, but in this section

11Cxx Polynomials and matrices
11C08 Polynomials [See also 13F20]
11C20 Matrices, determinants [See also 15B36]
11C99 None of the above, but in this section

11Dxx Diophantine equations [See also 11Gxx, 14Gxx]
11D04 Linear equations
11D07 The Frobenius problem
11D09 Quadratic and bilinear equations
11D25 Cubic and quartic equations
11D41 Higher degree equations; Fermat's equation
11D45 Counting solutions of Diophantine equations
11D57 Multiplicative and norm form equations
11D59 Thue-Mahler equations
11D61 Exponential equations
11D68 Rational numbers as sums of fractions
11D72 Equations in many variables [See also 11P55]
11D75 Diophantine inequalities [See also 11J25]
11D79 Congruences in many variables
11D85 Representation problems [See also 11P55]
11D88 p-adic and power series fields
11D99 None of the above, but in this section

11Exx Forms and linear algebraic groups [See also 19Gxx] (For quadratic forms in linear algebra, see 15A63)
11E04 Quadratic forms over general fields
11E08 Quadratic forms over local rings and fields
11E10 Forms over real fields
11E12 Quadratic forms over global rings and fields

11E16 General binary quadratic forms
11E20 General ternary and quaternary quadratic forms; forms of more than two variables
11E25 Sums of squares and representations by other particular quadratic forms
11E39 Bilinear and Hermitian forms
11E41 Class numbers of quadratic and Hermitian forms
11E45 Analytic theory (Epstein zeta functions; relations with automorphic forms and functions)
11E57 Classical groups [See also 14Lxx, 20Gxx]
11E70 *K*-theory of quadratic and Hermitian forms
11E72 Galois cohomology of linear algebraic groups [See also 20G10]
11E76 Forms of degree higher than two
11E81 Algebraic theory of quadratic forms; Witt groups and rings [See also 19G12, 19G24]
11E88 Quadratic spaces; Cli ord algebras [See also 15A63, 15A66]
11E95 *p*-adic theory
11E99 None of the above, but in this section

11Fxx Discontinuous groups and automorphic forms [See also 11R39, 11S37, 14Gxx, 14Kxx, 22E50, 22E55, 30F35, 32Nxx] (For relations with quadratic forms, see 11E45)
11F03 Modular and automorphic functions
11F06 Structure of modular groups and generalizations; arithmetic groups [See also 20H05, 20H10, 22E40]
11F11 Holomorphic modular forms of integral weight
11F12 Automorphic forms, one variable
11F20 Dedekind eta function, Dedekind sums
11F22 Relationship to Lie algebras and finite simple groups
11F23 Relations with algebraic geometry and topology
11F25 Hecke-Petersson operators, di erential operators (one variable)
11F27 Theta series; Weil representation; theta correspondences
11F30 Fourier coe cients of automorphic forms
11F32 Modular correspondences, etc.
11F33 Congruences for modular and *p*-adic modular forms [See also 14G20, 22E50]
11F37 Forms of half-integer weight; nonholomorphic modular forms
11F41 Automorphic forms on GL(2); Hilbert and Hilbert-Siegel modular groups and their modular and automorphic forms; Hilbert modular surfaces [See also 14J20]
11F46 Siegel modular groups; Siegel and Hilbert-Siegel modular and automorphic forms
11F50 Jacobi forms
11F52 Modular forms associated to Drinfel 'd modules
11F55 Other groups and their modular and automorphic forms (several variables)
11F60 Hecke-Petersson operators, di erential operators (several variables)
11F66 Langlands L-functions; one variable Dirichlet series and functional equations
11F67 Special values of automorphic *L*-series, periods of modular forms, cohomology, modular symbols
11F68 Dirichlet series in several complex variables associated to automorphic forms; Weyl group multiple Dirichlet series
11F70 Representation-theoretic methods; automorphic representations over local and global fields
11F72 Spectral theory; Selberg trace formula
11F75 Cohomology of arithmetic groups
11F80 Galois representations
11F85 *p*-adic theory, local fields [See also 14G20, 22E50]
11F99 None of the above, but in this section

11Gxx Arithmetic algebraic geometry (Diophantine geometry) [See also 11Dxx, 14Gxx, 14Kxx]
11G05 Elliptic curves over global fields [See also 14H52]
11G07 Elliptic curves over local fields [See also 14G20, 14H52]
11G09 Drinfel 'd modules; higher-dimensional motives, etc. [See also 14L05]
11G10 Abelian varieties of dimension > 1 [See also 14Kxx]

11G15 Complex multiplication and moduli of abelian varieties [See also 14K22]
11G16 Elliptic and modular units [See also 11R27]
11G18 Arithmetic aspects of modular and Shimura varieties [See also 14G35]
11G20 Curves over finite and local fields [See also 14H25]
11G25 Varieties over finite and local fields [See also 14G15, 14G20]
11G30 Curves of arbitrary genus or genus , 1 over global fields [See also 14H25]
11G32 Dessins d'enfants, Belyĭ theory
11G35 Varieties over global fields [See also 14G25]
11G40 *L*-functions of varieties over global fields; Birch-Swinnerton-Dyer conjecture [See also 14G10]
11G42 Arithmetic mirror symmetry [See also 14J33]
11G45 Geometric class field theory [See also 11R37, 14C35, 19F05]
11G50 Heights [See also 14G40, 37P30]
11G55 Polylogarithms and relations with *K*-theory
11G99 None of the above, but in this section

11Hxx Geometry of numbers (For applications in coding theory, see 94B75)
11H06 Lattices and convex bodies [See also 11P21, 52C05, 52C07]
11H16 Nonconvex bodies
11H31 Lattice packing and covering [See also 05B40, 52C15, 52C17]
11H46 Products of linear forms
11H50 Minima of forms
11H55 Quadratic forms (reduction theory, extreme forms, etc.)
11H56 Automorphism groups of lattices
11H60 Mean value and transfer theorems
11H71 Relations with coding theory
11H99 None of the above, but in this section

11Jxx Diophantine approximation, transcendental number theory [See also 11K60]
11J04 Homogeneous approximation to one number
11J06 Markov and Lagrange spectra and generalizations
11J13 Simultaneous homogeneous approximation, linear forms
11J17 Approximation by numbers from a fixed field
11J20 Inhomogeneous linear forms
11J25 Diophantine inequalities [See also 11D75]
11J54 Small fractional parts of polynomials and generalizations
11J61 Approximation in non-Archimedean valuations
11J68 Approximation to algebraic numbers
11J70 Continued fractions and generalizations [See also 11A55, 11K50]
11J71 Distribution modulo one [See also 11K06]
11J72 Irrationality; linear independence over a field
11J81 Transcendence (general theory)
11J82 Measures of irrationality and of transcendence
11J83 Metric theory
11J85 Algebraic independence; Gel′fond's method
11J86 Linear forms in logarithms; Baker's method
11J87 Schmidt Subspace Theorem and applications
11J89 Transcendence theory of elliptic and abelian functions
11J91 Transcendence theory of other special functions
11J93 Transcendence theory of Drinfel'd and *t*-modules
11J95 Results involving abelian varieties
11J97 Analogues of methods in Nevanlinna theory (work of Vojta et al.)
11J99 None of the above, but in this section

11Kxx Probabilistic theory: distribution modulo 1; metric theory of algorithms
11K06 General theory of distribution modulo 1 [See also 11J71]
11K16 Normal numbers, radix expansions, Pisot numbers, Salem numbers, good lattice points, etc. [See also 11A63]
11K31 Special sequences
11K36 Well-distributed sequences and other variations
11K38 Irregularities of distribution, discrepancy [See also 11Nxx]

11K41 Continuous, p-adic and abstract analogues
11K45 Pseudo-random numbers; Monte Carlo methods
11K50 Metric theory of continued fractions [See also 11A55, 11J70]
11K55 Metric theory of other algorithms and expansions; measure and Hausdor dimension [See also 11N99, 28Dxx]
11K60 Diophantine approximation [See also 11Jxx]
11K65 Arithmetic functions [See also 11Nxx]
11K70 Harmonic analysis and almost periodicity
11K99 None of the above, but in this section

11Lxx Exponential sums and character sums (For finite fields, see 11Txx)
11L03 Trigonometric and exponential sums, general
11L05 Gauss and Kloosterman sums; generalizations
11L07 Estimates on exponential sums
11L10 Jacobsthal and Brewer sums; other complete character sums
11L15 Weyl sums
11L20 Sums over primes
11L26 Sums over arbitrary intervals
11L40 Estimates on character sums
11L99 None of the above, but in this section

11Mxx Zeta and L-functions: analytic theory
11M06 (s) and $L(s;\ )$
11M20 Real zeros of $L(s;\ )$; results on $L(1;\ )$
11M26 Nonreal zeros of (s) and $L(s;\ )$; Riemann and other hypotheses
11M32 Multiple Dirichlet series and zeta functions and multizeta values
11M35 Hurwitz and Lerch zeta functions
11M36 Selberg zeta functions and regularized determinants; applications to spectral theory, Dirichlet series, Eisenstein series, etc. Explicit formulas
11M38 Zeta and L-functions in characteristic p
11M41 Other Dirichlet series and zeta functions (For local and global ground fields, see 11R42, 11R52, 11S40, 11S45; for algebro-geometric methods, see 14G10; see also 11E45, 11F66, 11F70, 11F72)
11M45 Tauberian theorems [See also 40E05]
11M50 Relations with random matrices
11M55 Relations with noncommutative geometry
11M99 None of the above, but in this section

11Nxx Multiplicative number theory
11N05 Distribution of primes
11N13 Primes in progressions [See also 11B25]
11N25 Distribution of integers with specified multiplicative constraints
11N30 Turán theory [See also 30Bxx]
11N32 Primes represented by polynomials; other multiplicative structure of polynomial values
11N35 Sieves
11N36 Applications of sieve methods
11N37 Asymptotic results on arithmetic functions
11N45 Asymptotic results on counting functions for algebraic and topological structures
11N56 Rate of growth of arithmetic functions
11N60 Distribution functions associated with additive and positive multiplicative functions
11N64 Other results on the distribution of values or the characterization of arithmetic functions
11N69 Distribution of integers in special residue classes
11N75 Applications of automorphic functions and forms to multiplicative problems [See also 11Fxx]
11N80 Generalized primes and integers
11N99 None of the above, but in this section

11Pxx Additive number theory; partitions
11P05 Waring's problem and variants
11P21 Lattice points in specified regions
11P32 Goldbach-type theorems; other additive questions involving primes
11P55 Applications of the Hardy-Littlewood method [See also 11D85]
11P70 Inverse problems of additive number theory, including sumsets
11P81 Elementary theory of partitions [See also 05A17]
11P82 Analytic theory of partitions

11P83 Partitions; congruences and congruential restrictions
11P84 Partition identities; identities of Rogers-Ramanujan type
11P99 None of the above, but in this section

11Rxx Algebraic number theory: global fields (For complex multiplication, see 11G15)
11R04 Algebraic numbers; rings of algebraic integers
11R06 PV-numbers and generalizations; other special algebraic numbers; Mahler measure
11R09 Polynomials (irreducibility, etc.)
11R11 Quadratic extensions
11R16 Cubic and quartic extensions
11R18 Cyclotomic extensions
11R20 Other abelian and metabelian extensions
11R21 Other number fields
11R23 Iwasawa theory
11R27 Units and factorization
11R29 Class numbers, class groups, discriminants
11R32 Galois theory
11R33 Integral representations related to algebraic numbers; Galois module structure of rings of integers [See also 20C10]
11R34 Galois cohomology [See also 12Gxx, 19A31]
11R37 Class field theory
11R39 Langlands-Weil conjectures, nonabelian class field theory [See also 11Fxx, 22E55]
11R42 Zeta functions and L-functions of number fields [See also 11M41, 19F27]
11R44 Distribution of prime ideals [See also 11N05]
11R45 Density theorems
11R47 Other analytic theory [See also 11Nxx]
11R52 Quaternion and other division algebras: arithmetic, zeta functions
11R54 Other algebras and orders, and their zeta and L-functions [See also 11S45, 16Hxx, 16Kxx]
11R56 Adèle rings and groups
11R58 Arithmetic theory of algebraic function fields [See also 14-XX]
11R60 Cyclotomic function fields (class groups, Bernoulli objects, etc.)
11R65 Class groups and Picard groups of orders
11R70 K-theory of global fields [See also 19Fxx]
11R80 Totally real fields [See also 12J15]
11R99 None of the above, but in this section

11Sxx Algebraic number theory: local and p-adic fields
11S05 Polynomials
11S15 Ramification and extension theory
11S20 Galois theory
11S23 Integral representations
11S25 Galois cohomology [See also 12Gxx, 16H05]
11S31 Class field theory; p-adic formal groups [See also 14L05]
11S37 Langlands-Weil conjectures, nonabelian class field theory [See also 11Fxx, 22E50]
11S40 Zeta functions and L-functions [See also 11M41, 19F27]
11S45 Algebras and orders, and their zeta functions [See also 11R52, 11R54, 16Hxx, 16Kxx]
11S70 K-theory of local fields [See also 19Fxx]
11S80 Other analytic theory (analogues of beta and gamma functions, p-adic integration, etc.)
11S82 Non-Archimedean dynamical systems [See mainly 37Pxx]
11S85 Other nonanalytic theory
11S90 Prehomogeneous vector spaces
11S99 None of the above, but in this section

11Txx Finite fields and commutative rings (number-theoretic aspects)
11T06 Polynomials
11T22 Cyclotomy
11T23 Exponential sums
11T24 Other character sums and Gauss sums
11T30 Structure theory
11T55 Arithmetic theory of polynomial rings over finite fields
11T60 Finite upper half-planes
11T71 Algebraic coding theory; cryptography
11T99 None of the above, but in this section

11Uxx Connections with logic
11U05 Decidability [See also 03B25]
11U07 Ultraproducts [See also 03C20]
11U09 Model theory [See also 03Cxx]
11U10 Nonstandard arithmetic [See also 03H15]
11U99 None of the above, but in this section

11Yxx Computational number theory [See also 11-04]
11Y05 Factorization
11Y11 Primality
11Y16 Algorithms; complexity [See also 68Q25]
11Y35 Analytic computations
11Y40 Algebraic number theory computations
11Y50 Computer solution of Diophantine equations
11Y55 Calculation of integer sequences
11Y60 Evaluation of constants
11Y65 Continued fraction calculations
11Y70 Values of arithmetic functions; tables
11Y99 None of the above, but in this section

11Zxx Miscellaneous applications of number theory
11Z05 Miscellaneous applications of number theory
11Z99 None of the above, but in this section

12-XX Field theory and polynomials

12-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
12-01 Instructional exposition (textbooks, tutorial papers, etc.)
12-02 Research exposition (monographs, survey articles)
12-03 Historical (must also be assigned at least one classification number from Section 01)
12-04 Explicit machine computation and programs (not the theory of computation or programming)
12-06 Proceedings, conferences, collections, etc.

12Dxx Real and complex fields
12D05 Polynomials: factorization
12D10 Polynomials: location of zeros (algebraic theorems) (For the analytic theory, see 26C10, 30C15)
12D15 Fields related with sums of squares (formally real fields, Pythagorean fields, etc.) [See also 11Exx]
12D99 None of the above, but in this section

12Exx General field theory
12E05 Polynomials (irreducibility, etc.)
12E10 Special polynomials
12E12 Equations
12E15 Skew fields, division rings [See also 11R52, 11R54, 11S45, 16Kxx]
12E20 Finite fields (field-theoretic aspects)
12E25 Hilbertian fields; Hilbert's irreducibility theorem
12E30 Field arithmetic
12E99 None of the above, but in this section

12Fxx Field extensions
12F05 Algebraic extensions
12F10 Separable extensions, Galois theory
12F12 Inverse Galois theory
12F15 Inseparable extensions
12F20 Transcendental extensions
12F99 None of the above, but in this section

12Gxx Homological methods (field theory)
12G05 Galois cohomology [See also 14F22, 16Hxx, 16K50]
12G10 Cohomological dimension
12G99 None of the above, but in this section

12Hxx Di erential and di erence algebra
12H05 Di erential algebra [See also 13Nxx]
12H10 Di erence algebra [See also 39Axx]
12H20 Abstract di erential equations [See also 34Mxx]
12H25 *p*-adic di erential equations [See also 11S80, 14G20]
12H99 None of the above, but in this section

12Jxx Topological fields
12J05 Normed fields
12J10 Valued fields
12J12 Formally *p*-adic fields

12J15 Ordered fields
12J17 Topological semifields
12J20 General valuation theory [See also 13A18]
12J25 Non-Archimedean valued fields [See also 30G06, 32P05, 46S10, 47S10]
12J27 Krasner-Tate algebras [See mainly 32P05; see also 46S10, 47S10]
12J99 None of the above, but in this section

12Kxx Generalizations of fields
12K05 Near-fields [See also 16Y30]
12K10 Semifields [See also 16Y60]
12K99 None of the above, but in this section

12Lxx Connections with logic
12L05 Decidability [See also 03B25]
12L10 Ultraproducts [See also 03C20]
12L12 Model theory [See also 03C60]
12L15 Nonstandard arithmetic [See also 03H15]
12L99 None of the above, but in this section

12Yxx Computational aspects of field theory and polynomials
12Y05 Computational aspects of field theory and polynomials
12Y99 None of the above, but in this section

13-XX Commutative algebra

13-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
13-01 Instructional exposition (textbooks, tutorial papers, etc.)
13-02 Research exposition (monographs, survey articles)
13-03 Historical (must also be assigned at least one classification number from Section 01)
13-04 Explicit machine computation and programs (not the theory of computation or programming)
13-06 Proceedings, conferences, collections, etc.

13Axx General commutative ring theory
13A02 Graded rings [See also 16W50]
13A05 Divisibility; factorizations [See also 13F15]
13A15 Ideals; multiplicative ideal theory
13A18 Valuations and their generalizations [See also 12J20]
13A30 Associated graded rings of ideals (Rees ring, form ring), analytic spread and related topics
13A35 Characteristic p methods (Frobenius endomorphism) and reduction to characteristic p; tight closure [See also 13B22]
13A50 Actions of groups on commutative rings; invariant theory [See also 14L24]
13A99 None of the above, but in this section

13Bxx Ring extensions and related topics
13B02 Extension theory
13B05 Galois theory
13B10 Morphisms
13B21 Integral dependence; going up, going down
13B22 Integral closure of rings and ideals [See also 13A35]; integrally closed rings, related rings (Japanese, etc.)
13B25 Polynomials over commutative rings [See also 11C08, 11T06, 13F20, 13M10]
13B30 Rings of fractions and localization [See also 16S85]
13B35 Completion [See also 13J10]
13B40 Étale and flat extensions; Henselization; Artin approximation [See also 13J15, 14B12, 14B25]
13B99 None of the above, but in this section

13Cxx Theory of modules and ideals
13C05 Structure, classification theorems
13C10 Projective and free modules and ideals [See also 19A13]
13C11 Injective and flat modules and ideals
13C12 Torsion modules and ideals
13C13 Other special types
13C14 Cohen-Macaulay modules [See also 13H10]
13C15 Dimension theory, depth, related rings (catenary, etc.)
13C20 Class groups [See also 11R29]
13C40 Linkage, complete intersections and determinantal ideals [See also 14M06, 14M10, 14M12]
13C60 Module categories

13C99 None of the above, but in this section

13Dxx Homological methods (For noncommutative rings, see 16Exx; for general categories, see 18Gxx)
13D02 Syzygies, resolutions, complexes
13D03 (Co)homology of commutative rings and algebras (e.g., Hochschild, André-Quillen, cyclic, dihedral, etc.)
13D05 Homological dimension
13D07 Homological functors on modules (Tor, Ext, etc.)
13D09 Derived categories
13D10 Deformations and infinitesimal methods [See also 14B10, 14B12, 14D15, 32Gxx]
13D15 Grothendieck groups, *K*-theory [See also 14C35, 18F30, 19Axx, 19D50]
13D22 Homological conjectures (intersection theorems)
13D30 Torsion theory [See also 13C12, 18E40]
13D40 Hilbert-Samuel and Hilbert-Kunz functions; Poincaré series
13D45 Local cohomology [See also 14B15]
13D99 None of the above, but in this section

13Exx Chain conditions, finiteness conditions
13E05 Noetherian rings and modules
13E10 Artinian rings and modules, finite-dimensional algebras
13E15 Rings and modules of finite generation or presentation; number of generators
13E99 None of the above, but in this section

13Fxx Arithmetic rings and other special rings
13F05 Dedekind, Prüfer, Krull and Mori rings and their generalizations
13F07 Euclidean rings and generalizations
13F10 Principal ideal rings
13F15 Rings defined by factorization properties (e.g., atomic, factorial, half-factorial) [See also 13A05, 14M05]
13F20 Polynomial rings and ideals; rings of integer-valued polynomials [See also 11C08, 13B25]
13F25 Formal power series rings [See also 13J05]
13F30 Valuation rings [See also 13A18]
13F35 Witt vectors and related rings
13F40 Excellent rings
13F45 Seminormal rings
13F50 Rings with straightening laws, Hodge algebras
13F55 Stanley-Reisner face rings; simplicial complexes [See also 55U10]
13F60 Cluster algebras
13F99 None of the above, but in this section

13Gxx Integral domains
13G05 Integral domains
13G99 None of the above, but in this section

13Hxx Local rings and semilocal rings
13H05 Regular local rings
13H10 Special types (Cohen-Macaulay, Gorenstein, Buchsbaum, etc.) [See also 14M05]
13H15 Multiplicity theory and related topics [See also 14C17]
13H99 None of the above, but in this section

13Jxx Topological rings and modules [See also 16W60, 16W80]
13J05 Power series rings [See also 13F25]
13J07 Analytical algebras and rings [See also 32B05]
13J10 Complete rings, completion [See also 13B35]
13J15 Henselian rings [See also 13B40]
13J20 Global topological rings
13J25 Ordered rings [See also 06F25]
13J30 Real algebra [See also 12D15, 14Pxx]
13J99 None of the above, but in this section

13Lxx Applications of logic to commutative algebra [See also 03Cxx, 03Hxx]
13L05 Applications of logic to commutative algebra [See also 03Cxx, 03Hxx]
13L99 None of the above, but in this section

13Mxx Finite commutative rings (For number-theoretic aspects, see 11Txx)
13M05 Structure
13M10 Polynomials
13M99 None of the above, but in this section

synopa13NxxDi erential algebra [See also 12H05, 14F10]

13N05 Modules of di erentials
13N10 Rings of di erential operators and their modules [See also 16S32, 32C38]
13N15 Derivations
13N99 None of the above, but in this section

13Pxx Computational aspects and applications [See also 14Qxx, 68W30]
13P05 Polynomials, factorization [See also 12Y05]
13P10 Gröbner bases; other bases for ideals and modules (e.g., Janet and border bases)
13P15 Solving polynomial systems; resultants
13P20 Computational homological algebra [See also 13Dxx]
13P25 Applications of commutative algebra (e.g., to statistics, control theory, optimization, etc.)
13P99 None of the above, but in this section

14-XX Algebraic geometry

14-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
14-01 Instructional exposition (textbooks, tutorial papers, etc.)
14-02 Research exposition (monographs, survey articles)
14-03 Historical (must also be assigned at least one classification number from Section 01)
14-04 Explicit machine computation and programs (not the theory of computation or programming)
14-06 Proceedings, conferences, collections, etc.

14Axx Foundations
14A05 Relevant commutative algebra [See also 13-XX]
14A10 Varieties and morphisms
14A15 Schemes and morphisms
14A20 Generalizations (algebraic spaces, stacks)
14A22 Noncommutative algebraic geometry [See also 16S38]
14A25 Elementary questions
14A99 None of the above, but in this section

14Bxx Local theory
14B05 Singularities [See also 14E15, 14H20, 14J17, 32Sxx, 58Kxx]
14B07 Deformations of singularities [See also 14D15, 32S30]
14B10 Infinitesimal methods [See also 13D10]
14B12 Local deformation theory, Artin approximation, etc. [See also 13B40, 13D10]
14B15 Local cohomology [See also 13D45, 32C36]
14B20 Formal neighborhoods
14B25 Local structure of morphisms: étale, flat, etc. [See also 13B40]
14B99 None of the above, but in this section

14Cxx Cycles and subschemes
14C05 Parametrization (Chow and Hilbert schemes)
14C15 (Equivariant) Chow groups and rings; motives
14C17 Intersection theory, characteristic classes, intersection multiplicities [See also 13H15]
14C20 Divisors, linear systems, invertible sheaves
14C21 Pencils, nets, webs [See also 53A60]
14C22 Picard groups
14C25 Algebraic cycles
14C30 Transcendental methods, Hodge theory [See also 14D07, 32G20, 32J25, 32S35], Hodge conjecture
14C34 Torelli problem [See also 32G20]
14C35 Applications of methods of algebraic K-theory [See also 19Exx]
14C40 Riemann-Roch theorems [See also 19E20, 19L10]
14C99 None of the above, but in this section

14Dxx Families, fibrations
14D05 Structure of families (Picard-Lefschetz, monodromy, etc.)
14D06 Fibrations, degenerations
14D07 Variation of Hodge structures [See also 32G20]
14D10 Arithmetic ground fields (finite, local, global)
14D15 Formal methods; deformations [See also 13D10, 14B07, 32Gxx]

14D20 Algebraic moduli problems, moduli of vector bundles (For analytic moduli problems, see 32G13)
14D21 Applications of vector bundles and moduli spaces in mathematical physics (twistor theory, instantons, quantum field theory)
14D22 Fine and coarse moduli spaces
14D23 Stacks and moduli problems
14D24 Geometric Langlands program: algebro-geometric aspects [See also 22E57]
14D99 None of the above, but in this section

14Exx Birational geometry
14E05 Rational and birational maps
14E07 Birational automorphisms, Cremona group and generalizations
14E08 Rationality questions [See also 14M20]
14E15 Global theory and resolution of singularities [See also 14B05, 32S20, 32S45]
14E16 McKay correspondence
14E18 Arcs and motivic integration
14E20 Coverings [See also 14H30]
14E22 Ramification problems [See also 11S15]
14E25 Embeddings
14E30 Minimal model program (Mori theory, extremal rays)
14E99 None of the above, but in this section

14Fxx (Co)homology theory [See also 13Dxx]
14F05 Sheaves, derived categories of sheaves and related constructions [See also 14H60, 14J60, 18F20, 32Lxx, 46M20]
14F10 Di erentials and other special sheaves; D-modules; Bernstein-Sato ideals and polynomials [See also 13Nxx, 32C38]
14F17 Vanishing theorems [See also 32L20]
14F18 Multiplier ideals
14F20 Étale and other Grothendieck topologies and cohomologies
14F22 Brauer groups of schemes [See also 12G05, 16K50]
14F25 Classical real and complex cohomology
14F30 p-adic cohomology, crystalline cohomology
14F35 Homotopy theory; fundamental groups [See also 14H30]
14F40 de Rham cohomology [See also 14C30, 32C35, 32L10]
14F42 Motivic cohomology; motivic homotopy theory
14F43 Other algebro-geometric (co)homologies (e.g., intersection, equivariant, Lawson, Deligne (co)homologies)
14F45 Topological properties
14F99 None of the above, but in this section

14Gxx Arithmetic problems. Diophantine geometry [See also 11Dxx, 11Gxx]
14G05 Rational points
14G10 Zeta-functions and related questions [See also 11G40] (Birch-Swinnerton-Dyer conjecture)
14G15 Finite ground fields
14G17 Positive characteristic ground fields
14G20 Local ground fields
14G22 Rigid analytic geometry
14G25 Global ground fields
14G27 Other nonalgebraically closed ground fields
14G32 Universal profinite groups (relationship to moduli spaces, projective and moduli towers, Galois theory)
14G35 Modular and Shimura varieties [See also 11F41, 11F46, 11G18]
14G40 Arithmetic varieties and schemes; Arakelov theory; heights [See also 11G50, 37P30]
14G50 Applications to coding theory and cryptography [See also 94A60, 94B27, 94B40]
14G99 None of the above, but in this section

14Hxx Curves
14H05 Algebraic functions; function fields [See also 11R58]
14H10 Families, moduli (algebraic)
14H15 Families, moduli (analytic) [See also 30F10, 32Gxx]
14H20 Singularities, local rings [See also 13Hxx, 14B05]
14H25 Arithmetic ground fields [See also 11Dxx, 11G05, 14Gxx]
14H30 Coverings, fundamental group [See also 14E20, 14F35]
14H37 Automorphisms

14H40 Jacobians, Prym varieties [See also 32G20]
14H42 Theta functions; Schottky problem [See also 14K25, 32G20]
14H45 Special curves and curves of low genus
14H50 Plane and space curves
14H51 Special divisors (gonality, Brill-Noether theory)
14H52 Elliptic curves [See also 11G05, 11G07, 14Kxx]
14H55 Riemann surfaces; Weierstrass points; gap sequences [See also 30Fxx]
14H57 Dessins d'enfants theory (For arithmetic aspects, see 11G32)
14H60 Vector bundles on curves and their moduli [See also 14D20, 14F05]
14H70 Relationships with integrable systems
14H81 Relationships with physics
14H99 None of the above, but in this section

14Jxx Surfaces and higher-dimensional varieties (For analytic theory, see 32Jxx)
14J10 Families, moduli, classification: algebraic theory
14J15 Moduli, classification: analytic theory; relations with modular forms [See also 32G13]
14J17 Singularities [See also 14B05, 14E15]
14J20 Arithmetic ground fields [See also 11Dxx, 11G25, 11G35, 14Gxx]
14J25 Special surfaces (For Hilbert modular surfaces, see 14G35)
14J26 Rational and ruled surfaces
14J27 Elliptic surfaces
14J28 $K3$ surfaces and Enriques surfaces
14J29 Surfaces of general type
14J30 3-folds [See also 32Q25]
14J32 Calabi-Yau manifolds
14J33 Mirror symmetry [See also 11G42, 53D37]
14J35 4-folds
14J40 n-folds ($n > 4$)
14J45 Fano varieties
14J50 Automorphisms of surfaces and higher-dimensional varieties
14J60 Vector bundles on surfaces and higher-dimensional varieties, and their moduli [See also 14D20, 14F05, 32Lxx]
14J70 Hypersurfaces
14J80 Topology of surfaces (Donaldson polynomials, Seiberg-Witten invariants)
14J81 Relationships with physics
14J99 None of the above, but in this section

14Kxx Abelian varieties and schemes
14K02 Isogeny
14K05 Algebraic theory
14K10 Algebraic moduli, classification [See also 11G15]
14K12 Subvarieties
14K15 Arithmetic ground fields [See also 11Dxx, 11Fxx, 11Gxx, 14Gxx]
14K20 Analytic theory; abelian integrals and differentials
14K22 Complex multiplication [See also 11G15]
14K25 Theta functions [See also 14H42]
14K30 Picard schemes, higher Jacobians [See also 14H40, 32G20]
14K99 None of the above, but in this section

14Lxx Algebraic groups (For linear algebraic groups, see 20Gxx; for Lie algebras, see 17B45)
14L05 Formal groups, p-divisible groups [See also 55N22]
14L10 Group varieties
14L15 Group schemes
14L17 Affine algebraic groups, hyperalgebra constructions [See also 17B45, 18D35]
14L24 Geometric invariant theory [See also 13A50]
14L30 Group actions on varieties or schemes (quotients) [See also 13A50, 14L24]
14L35 Classical groups (geometric aspects) [See also 20Gxx, 51N30]
14L40 Other algebraic groups (geometric aspects)
14L99 None of the above, but in this section

14Mxx Special varieties
14M05 Varieties defined by ring conditions (factorial, Cohen-Macaulay, seminormal) [See also 13F45, 13H10]
14M06 Linkage [See also 13C40]
14M07 Low codimension problems
14M10 Complete intersections [See also 13C40]

14M12 Determinantal varieties [See also 13C40]
14M15 Grassmannians, Schubert varieties, flag manifolds [See also 32M10, 51M35]
14M17 Homogeneous spaces and generalizations [See also 32M10, 53C30, 57T15]
14M20 Rational and unirational varieties [See also 14E08]
14M22 Rationally connected varieties
14M25 Toric varieties, Newton polyhedra [See also 52B20]
14M27 Compactifications; symmetric and spherical varieties
14M30 Supervarieties [See also 32C11, 58A50]
14M99 None of the above, but in this section

14Nxx Projective and enumerative geometry [See also 51-XX]
14N05 Projective techniques [See also 51N35]
14N10 Enumerative problems (combinatorial problems)
14N15 Classical problems, Schubert calculus
14N20 Configurations and arrangements of linear subspaces
14N25 Varieties of low degree
14N30 Adjunction problems
14N35 Gromov-Witten invariants, quantum cohomology, Gopakumar-Vafa invariants, Donaldson-Thomas invariants [See also 53D45]
14N99 None of the above, but in this section

14Pxx Real algebraic and real analytic geometry
14P05 Real algebraic sets [See also 12D15, 13J30]
14P10 Semialgebraic sets and related spaces
14P15 Real analytic and semianalytic sets [See also 32B20, 32C05]
14P20 Nash functions and manifolds [See also 32C07, 58A07]
14P25 Topology of real algebraic varieties
14P99 None of the above, but in this section

14Qxx Computational aspects in algebraic geometry [See also 12Y05, 13Pxx, 68W30]
14Q05 Curves
14Q10 Surfaces, hypersurfaces
14Q15 Higher-dimensional varieties
14Q20 E ectivity, complexity
14Q99 None of the above, but in this section

14Rxx A ne geometry
14R05 Classification of a ne varieties
14R10 A ne spaces (automorphisms, embeddings, exotic structures, cancellation problem)
14R15 Jacobian problem
14R20 Group actions on a ne varieties [See also 13A50, 14L30]
14R25 A ne fibrations [See also 14D06]
14R99 None of the above, but in this section

14Txx Tropical geometry [See also 12K10, 14M25, 14N10, 52B20]
14T05 Tropical geometry [See also 12K10, 14M25, 14N10, 52B20]
14T99 None of the above, but in this section

15-XX Linear and multilinear algebra; matrix theory

15-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
15-01 Instructional exposition (textbooks, tutorial papers, etc.)
15-02 Research exposition (monographs, survey articles)
15-03 Historical (must also be assigned at least one classification number from Section 01)
15-04 Explicit machine computation and programs (not the theory of computation or programming)
15-06 Proceedings, conferences, collections, etc.

15Axx Basic linear algebra
15A03 Vector spaces, linear dependence, rank
15A04 Linear transformations, semilinear transformations
15A06 Linear equations
15A09 Matrix inversion, generalized inverses
15A12 Conditioning of matrices [See also 65F35]
15A15 Determinants, permanents, other special matrix functions [See also 19B10, 19B14]
15A16 Matrix exponential and similar functions of matrices

15A18 Eigenvalues, singular values, and eigenvectors
15A21 Canonical forms, reductions, classification
15A22 Matrix pencils [See also 47A56]
15A23 Factorization of matrices
15A24 Matrix equations and identities
15A27 Commutativity
15A29 Inverse problems
15A30 Algebraic systems of matrices [See also 16S50, 20Gxx, 20Hxx]
15A33 Matrices over special rings (quaternions, finite fields, etc.)
15A39 Linear inequalities
15A42 Inequalities involving eigenvalues and eigenvectors
15A45 Miscellaneous inequalities involving matrices
15A54 Matrices over function rings in one or more variables
15A60 Norms of matrices, numerical range, applications of functional analysis to matrix theory [See also 65F35, 65J05]
15A63 Quadratic and bilinear forms, inner products [See mainly 11Exx]
15A66 Cli ord algebras, spinors
15A69 Multilinear algebra, tensor products
15A72 Vector and tensor algebra, theory of invariants [See also 13A50, 14L24]
15A75 Exterior algebra, Grassmann algebras
15A78 Other algebras built from modules
15A80 Max-plus and related algebras
15A83 Matrix completion problems
15A86 Linear preserver problems
15A99 Miscellaneous topics

15Bxx Special matrices
15B05 Toeplitz, Cauchy, and related matrices
15B10 Orthogonal matrices
15B15 Fuzzy matrices
15B33 Matrices over special rings (quaternions, finite fields, etc.)
15B34 Boolean and Hadamard matrices
15B35 Sign pattern matrices
15B36 Matrices of integers [See also 11C20]
15B48 Positive matrices and their generalizations; cones of matrices
15B51 Stochastic matrices
15B52 Random matrices
15B57 Hermitian, skew-Hermitian, and related matrices
15B99 None of the above, but in this section

16-XX Associative rings and algebras (For the commutative case, see 13-XX)

16-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
16-01 Instructional exposition (textbooks, tutorial papers, etc.)
16-02 Research exposition (monographs, survey articles)
16-03 Historical (must also be assigned at least one classification number from Section 01)
16-04 Explicit machine computation and programs (not the theory of computation or programming)
16-06 Proceedings, conferences, collections, etc.

16Bxx General and miscellaneous
16B50 Category-theoretic methods and results (except as in 16D90) [See also 18-XX]
16B70 Applications of logic [See also 03Cxx]
16B99 None of the above, but in this section

16Dxx Modules, bimodules and ideals
16D10 General module theory
16D20 Bimodules
16D25 Ideals
16D30 Infinite-dimensional simple rings (except as in 16Kxx)
16D40 Free, projective, and flat modules and ideals [See also 19A13]
16D50 Injective modules, self-injective rings [See also 16L60]
16D60 Simple and semisimple modules, primitive rings and ideals
16D70 Structure and classification (except as in 16Gxx), direct sum decomposition, cancellation
16D80 Other classes of modules and ideals [See also 16G50]
16D90 Module categories [See also 16Gxx, 16S90]; module theory in a category-theoretic context; Morita equivalence and duality

16D99 None of the above, but in this section

16Exx Homological methods (For commutative rings, see 13Dxx; for general categories, see 18Gxx)
16E05 Syzygies, resolutions, complexes
16E10 Homological dimension
16E20 Grothendieck groups, *K*-theory, etc. [See also 18F30, 19Axx, 19D50]
16E30 Homological functors on modules (Tor, Ext, etc.)
16E35 Derived categories
16E40 (Co)homology of rings and algebras (e.g. Hochschild, cyclic, dihedral, etc.)
16E45 Di erential graded algebras and applications
16E50 von Neumann regular rings and generalizations
16E60 Semihereditary and hereditary rings, free ideal rings, Sylvester rings, etc.
16E65 Homological conditions on rings (generalizations of regular, Gorenstein, Cohen-Macaulay rings, etc.)
16E99 None of the above, but in this section

16Gxx Representation theory of rings and algebras
16G10 Representations of Artinian rings
16G20 Representations of quivers and partially ordered sets
16G30 Representations of orders, lattices, algebras over commutative rings [See also 16Hxx]
16G50 Cohen-Macaulay modules
16G60 Representation type (finite, tame, wild, etc.)
16G70 Auslander-Reiten sequences (almost split sequences) and Auslander-Reiten quivers
16G99 None of the above, but in this section

16Hxx Algebras and orders (For arithmetic aspects, see 11R52, 11R54, 11S45; for representation theory, see 16G30)
16H05 Separable algebras (e.g., quaternion algebras, Azumaya algebras, etc.)
16H10 Orders in separable algebras
16H15 Commutative orders
16H20 Lattices over orders
16H99 None of the above, but in this section

16Kxx Division rings and semisimple Artin rings [See also 12E15, 15A30]
16K20 Finite-dimensional (For crossed products, see 16S35)
16K40 Infinite-dimensional and general
16K50 Brauer groups [See also 12G05, 14F22]
16K99 None of the above, but in this section

16Lxx Local rings and generalizations
16L30 Noncommutative local and semilocal rings, perfect rings
16L60 Quasi-Frobenius rings [See also 16D50]
16L99 None of the above, but in this section

16Nxx Radicals and radical properties of rings
16N20 Jacobson radical, quasimultiplication
16N40 Nil and nilpotent radicals, sets, ideals, rings
16N60 Prime and semiprime rings [See also 16D60, 16U10]
16N80 General radicals and rings (For radicals in module categories, see 16S90)
16N99 None of the above, but in this section

16Pxx Chain conditions, growth conditions, and other forms of finiteness
16P10 Finite rings and finite-dimensional algebras (For semisimple, see 16K20; for commutative, see 11Txx, 13Mxx)
16P20 Artinian rings and modules
16P40 Noetherian rings and modules
16P50 Localization and Noetherian rings [See also 16U20]
16P60 Chain conditions on annihilators and summands: Goldie-type conditions [See also 16U20], Krull dimension
16P70 Chain conditions on other classes of submodules, ideals, subrings, etc.; coherence
16P90 Growth rate, Gelfand-Kirillov dimension
16P99 None of the above, but in this section

16Rxx Rings with polynomial identity
16R10 *T*-ideals, identities, varieties of rings and algebras

16R20 Semiprime p.i. rings, rings embeddable in matrices over commutative rings
16R30 Trace rings and invariant theory
16R40 Identities other than those of matrices over commutative rings
16R50 Other kinds of identities (generalized polynomial, rational, involution)
16R60 Functional identities
16R99 None of the above, but in this section

16Sxx Rings and algebras arising under various constructions
16S10 Rings determined by universal properties (free algebras, coproducts, adjunction of inverses, etc.)
16S15 Finite generation, finite presentability, normal forms (diamond lemma, term-rewriting)
16S20 Centralizing and normalizing extensions
16S30 Universal enveloping algebras of Lie algebras [See mainly 17B35]
16S32 Rings of di erential operators [See also 13N10, 32C38]
16S34 Group rings [See also 20C05, 20C07], Laurent polynomial rings
16S35 Twisted and skew group rings, crossed products
16S36 Ordinary and skew polynomial rings and semigroup rings [See also 20M25]
16S37 Quadratic and Koszul algebras
16S38 Rings arising from non-commutative algebraic geometry [See also 14A22]
16S40 Smash products of general Hopf actions [See also 16T05]
16S50 Endomorphism rings; matrix rings [See also 15-XX]
16S60 Rings of functions, subdirect products, sheaves of rings
16S70 Extensions of rings by ideals
16S80 Deformations of rings [See also 13D10, 14D15]
16S85 Rings of fractions and localizations [See also 13B30]
16S90 Torsion theories; radicals on module categories [See also 13D30, 18E40] (For radicals of rings, see 16Nxx)
16S99 None of the above, but in this section

16Txx Hopf algebras, quantum groups and related topics
16T05 Hopf algebras and their applications [See also 16S40, 57T05]
16T10 Bialgebras
16T15 Coalgebras and comodules; corings
16T20 Ring-theoretic aspects of quantum groups [See also 17B37, 20G42, 81R50]
16T25 Yang-Baxter equations
16T30 Connections with combinatorics
16T99 None of the above, but in this section

16Uxx Conditions on elements
16U10 Integral domains
16U20 Ore rings, multiplicative sets, Ore localization
16U30 Divisibility, noncommutative UFDs
16U60 Units, groups of units
16U70 Center, normalizer (invariant elements)
16U80 Generalizations of commutativity
16U99 None of the above, but in this section

16Wxx Rings and algebras with additional structure
16W10 Rings with involution; Lie, Jordan and other nonassociative structures [See also 17B60, 17C50, 46Kxx]
16W20 Automorphisms and endomorphisms
16W22 Actions of groups and semigroups; invariant theory
16W25 Derivations, actions of Lie algebras
16W50 Graded rings and modules
16W55 “Super” (or “skew”) structure [See also 17A70, 17Bxx, 17C70] (For exterior algebras, see 15A75; for Cli ord algebras, see 11E88, 15A66)
16W60 Valuations, completions, formal power series and related constructions [See also 13Jxx]
16W70 Filtered rings; filtrational and graded techniques
16W80 Topological and ordered rings and modules [See also 06F25, 13Jxx]
16W99 None of the above, but in this section

16Yxx Generalizations (For nonassociative rings, see 17-XX)
16Y30 Near-rings [See also 12K05]

16Y60 Semirings [See also 12K10]
16Y99 None of the above, but in this section

16Zxx Computational aspects of associative rings
16Z05 Computational aspects of associative rings [See also 68W30]
16Z99 None of the above, but in this section

17-XX Nonassociative rings and algebras

17-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
17-01 Instructional exposition (textbooks, tutorial papers, etc.)
17-02 Research exposition (monographs, survey articles)
17-03 Historical (must also be assigned at least one classification number from Section 01)
17-04 Explicit machine computation and programs (not the theory of computation or programming)
17-06 Proceedings, conferences, collections, etc.
17-08 Computational methods

17Axx General nonassociative rings
17A01 General theory
17A05 Power-associative rings
17A15 Noncommutative Jordan algebras
17A20 Flexible algebras
17A30 Algebras satisfying other identities
17A32 Leibniz algebras
17A35 Division algebras
17A36 Automorphisms, derivations, other operators
17A40 Ternary compositions
17A42 Other n-ary compositions ($n \geq 3$)
17A45 Quadratic algebras (but not quadratic Jordan algebras)
17A50 Free algebras
17A60 Structure theory
17A65 Radical theory
17A70 Superalgebras
17A75 Composition algebras
17A80 Valued algebras
17A99 None of the above, but in this section

17Bxx Lie algebras and Lie superalgebras (For Lie groups, see 22Exx)
17B01 Identities, free Lie (super)algebras
17B05 Structure theory
17B08 Coadjoint orbits; nilpotent varieties
17B10 Representations, algebraic theory (weights)
17B15 Representations, analytic theory
17B20 Simple, semisimple, reductive (super)algebras
17B22 Root systems
17B25 Exceptional (super)algebras
17B30 Solvable, nilpotent (super)algebras
17B35 Universal enveloping (super)algebras [See also 16S30]
17B37 Quantum groups (quantized enveloping algebras) and related deformations [See also 16T20, 20G42, 81R50, 82B23]
17B40 Automorphisms, derivations, other operators
17B45 Lie algebras of linear algebraic groups [See also 14Lxx and 20Gxx]
17B50 Modular Lie (super)algebras
17B55 Homological methods in Lie (super)algebras
17B56 Cohomology of Lie (super)algebras
17B60 Lie (super)algebras associated with other structures (associative, Jordan, etc.) [See also 16W10, 17C40, 17C50]
17B62 Lie bialgebras; Lie coalgebras
17B63 Poisson algebras
17B65 Infinite-dimensional Lie (super)algebras [See also 22E65]
17B66 Lie algebras of vector fields and related (super) algebras
17B67 Kac-Moody (super)algebras; extended a ne Lie algebras; toroidal Lie algebras
17B68 Virasoro and related algebras
17B69 Vertex operators; vertex operator algebras and related structures
17B70 Graded Lie (super)algebras
17B75 Color Lie (super)algebras
17B80 Applications to integrable systems
17B81 Applications to physics
17B99 None of the above, but in this section

17Cxx Jordan algebras (algebras, triples and pairs)
17C05 Identities and free Jordan structures
17C10 Structure theory
17C17 Radicals
17C20 Simple, semisimple algebras
17C27 Idempotents, Peirce decompositions
17C30 Associated groups, automorphisms
17C36 Associated manifolds
17C37 Associated geometries
17C40 Exceptional Jordan structures
17C50 Jordan structures associated with other structures [See also 16W10]
17C55 Finite-dimensional structures
17C60 Division algebras
17C65 Jordan structures on Banach spaces and algebras [See also 46H70, 46L70]
17C70 Super structures
17C90 Applications to physics
17C99 None of the above, but in this section

17Dxx Other nonassociative rings and algebras
17D05 Alternative rings
17D10 Mal'cev (Mal'tsev) rings and algebras
17D15 Right alternative rings
17D20 (;)-rings, including (1 ; 1)-rings
17D25 Lie-admissible algebras
17D92 Genetic algebras
17D99 None of the above, but in this section

18-XX Category theory; homological algebra (For commutative rings see 13Dxx, for associative rings 16Exx, for groups 20Jxx, for topological groups and related structures 57Txx; see also 55Nxx and 55Uxx for algebraic topology)

18-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
18-01 Instructional exposition (textbooks, tutorial papers, etc.)
18-02 Research exposition (monographs, survey articles)
18-03 Historical (must also be assigned at least one classification number from Section 01)
18-04 Explicit machine computation and programs (not the theory of computation or programming)
18-06 Proceedings, conferences, collections, etc.

18Axx General theory of categories and functors
18A05 Definitions, generalizations
18A10 Graphs, diagram schemes, precategories [See especially 20L05]
18A15 Foundations, relations to logic and deductive systems [See also 03-XX]
18A20 Epimorphisms, monomorphisms, special classes of morphisms, null morphisms
18A22 Special properties of functors (faithful, full, etc.)
18A23 Natural morphisms, dinatural morphisms
18A25 Functor categories, comma categories
18A30 Limits and colimits (products, sums, directed limits, pushouts, fiber products, equalizers, kernels, ends and coends, etc.)
18A32 Factorization of morphisms, substructures, quotient structures, congruences, amalgams
18A35 Categories admitting limits (complete categories), functors preserving limits, completions
18A40 Adjoint functors (universal constructions, reflective subcategories, Kan extensions, etc.)
18A99 None of the above, but in this section

18Bxx Special categories
18B05 Category of sets, characterizations [See also 03-XX]
18B10 Category of relations, additive relations
18B15 Embedding theorems, universal categories [See also 18E20]
18B20 Categories of machines, automata, operative categories [See also 03D05, 68Qxx]
18B25 Topoi [See also 03G30]
18B30 Categories of topological spaces and continuous mappings [See also 54-XX]
18B35 Preorders, orders and lattices (viewed as categories) [See also 06-XX]

18B40 Groupoids, semigroupoids, semigroups, groups (viewed as categories) [See also 20Axx, 20L05, 20Mxx]
18B99 None of the above, but in this section

18Cxx Categories and theories
18C05 Equational categories [See also 03C05, 08C05]
18C10 Theories (e.g. algebraic theories), structure, and semantics [See also 03G30]
18C15 Triples (= standard construction, monad or triad), algebras for a triple, homology and derived functors for triples [See also 18Gxx]
18C20 Algebras and Kleisli categories associated with monads
18C30 Sketches and generalizations
18C35 Accessible and locally presentable categories
18C50 Categorical semantics of formal languages [See also 68Q55, 68Q65]
18C99 None of the above, but in this section

18Dxx Categories with structure
18D05 Double categories, 2-categories, bicategories and generalizations
18D10 Monoidal categories (= multiplicative categories), symmetric monoidal categories, braided categories [See also 19D23]
18D15 Closed categories (closed monoidal and Cartesian closed categories, etc.)
18D20 Enriched categories (over closed or monoidal categories)
18D25 Strong functors, strong adjunctions
18D30 Fibered categories
18D35 Structured objects in a category (group objects, etc.)
18D50 Operads [See also 55P48]
18D99 None of the above, but in this section

18Exx Abelian categories
18E05 Preadditive, additive categories
18E10 Exact categories, abelian categories
18E15 Grothendieck categories
18E20 Embedding theorems [See also 18B15]
18E25 Derived functors and satellites
18E30 Derived categories, triangulated categories
18E35 Localization of categories
18E40 Torsion theories, radicals [See also 13D30, 16S90]
18E99 None of the above, but in this section

18Fxx Categories and geometry
18F05 Local categories and functors
18F10 Grothendieck topologies [See also 14F20]
18F15 Abstract manifolds and fiber bundles [See also 55Rxx, 57Pxx]
18F20 Presheaves and sheaves [See also 14F05, 32C35, 32L10, 54B40, 55N30]
18F25 Algebraic K-theory and L-theory [See also 11Exx, 11R70, 11S70, 12-XX, 13D15, 14Cxx, 16E20, 19-XX, 46L80, 57R65, 57R67]
18F30 Grothendieck groups [See also 13D15, 16E20, 19Axx]
18F99 None of the above, but in this section

18Gxx Homological algebra [See also 13Dxx, 16Exx, 20Jxx, 55Nxx, 55Uxx, 57Txx]
18G05 Projectives and injectives [See also 13C10, 13C11, 16D40, 16D50]
18G10 Resolutions; derived functors [See also 13D02, 16E05, 18E25]
18G15 Ext and Tor, generalizations, Künneth formula [See also 55U25]
18G20 Homological dimension [See also 13D05, 16E10]
18G25 Relative homological algebra, projective classes
18G30 Simplicial sets, simplicial objects (in a category) [See also 55U10]
18G35 Chain complexes [See also 18E30, 55U15]
18G40 Spectral sequences, hypercohomology [See also 55Txx]
18G50 Nonabelian homological algebra
18G55 Homotopical algebra
18G60 Other (co)homology theories [See also 19D55, 46L80, 58J20, 58J22]
18G99 None of the above, but in this section

19-XX *K*-theory [See also 16E20, 18F25]

19-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
19-01 Instructional exposition (textbooks, tutorial papers, etc.)
19-02 Research exposition (monographs, survey articles)
19-03 Historical (must also be assigned at least one classification number from Section 01)
19-04 Explicit machine computation and programs (not the theory of computation or programming)
19-06 Proceedings, conferences, collections, etc.

19Axx Grothendieck groups and K_0 [See also 13D15, 18F30]
19A13 Stability for projective modules [See also 13C10]
19A15 E cient generation
19A22 Frobenius induction, Burnside and representation rings
19A31 K_0 of group rings and orders
19A49 K_0 of other rings
19A99 None of the above, but in this section

19Bxx Whitehead groups and K_1
19B10 Stable range conditions
19B14 Stability for linear groups
19B28 K_1 of group rings and orders [See also 57Q10]
19B37 Congruence subgroup problems [See also 20H05]
19B99 None of the above, but in this section

19Cxx Steinberg groups and K_2
19C09 Central extensions and Schur multipliers
19C20 Symbols, presentations and stability of K_2
19C30 K_2 and the Brauer group
19C40 Excision for K_2
19C99 None of the above, but in this section

19Dxx Higher algebraic *K*-theory
19D06 *Q*- and plus-constructions
19D10 Algebraic *K*-theory of spaces
19D23 Symmetric monoidal categories [See also 18D10]
19D25 Karoubi-Villamayor-Gersten *K*-theory
19D35 Negative *K*-theory, NK and Nil
19D45 Higher symbols, Milnor *K*-theory
19D50 Computations of higher *K*-theory of rings [See also 13D15, 16E20]
19D55 *K*-theory and homology; cyclic homology and cohomology [See also 18G60]
19D99 None of the above, but in this section

19Exx *K*-theory in geometry
19E08 *K*-theory of schemes [See also 14C35]
19E15 Algebraic cycles and motivic cohomology [See also 14C25, 14C35]
19E20 Relations with cohomology theories [See also 14Fxx]
19E99 None of the above, but in this section

19Fxx *K*-theory in number theory [See also 11R70, 11S70]
19F05 Generalized class field theory [See also 11G45]
19F15 Symbols and arithmetic [See also 11R37]
19F27 Étale cohomology, higher regulators, zeta and *L*-functions [See also 11G40, 11R42, 11S40, 14F20, 14G10]
19F99 None of the above, but in this section

19Gxx *K*-theory of forms [See also 11Exx]
19G05 Stability for quadratic modules
19G12 Witt groups of rings [See also 11E81]
19G24 *L*-theory of group rings [See also 11E81]
19G38 Hermitian *K*-theory, relations with *K*-theory of rings
19G99 None of the above, but in this section

19Jxx Obstructions from topology
19J05 Finiteness and other obstructions in K_0
19J10 Whitehead (and related) torsion
19J25 Surgery obstructions [See also 57R67]
19J35 Obstructions to group actions
19J99 None of the above, but in this section

19Kxx *K*-theory and operator algebras [See mainly 46L80, and also 46M20]
19K14 K_0 as an ordered group, traces

19K33 EXT and K-homology [See also 55N22]
19K35 Kasparov theory (KK-theory) [See also 58J22]
19K56 Index theory [See also 58J20, 58J22]
19K99 None of the above, but in this section

19Lxx Topological K-theory [See also 55N15, 55R50, 55S25]
19L10 Riemann-Roch theorems, Chern characters
19L20 J-homomorphism, Adams operations [See also 55Q50]
19L41 Connective K-theory, cobordism [See also 55N22]
19L47 Equivariant K-theory [See also 55N91, 55P91, 55Q91, 55R91, 55S91]
19L50 Twisted K-theory; di erential K-theory
19L64 Computations, geometric applications
19L99 None of the above, but in this section

19Mxx Miscellaneous applications of K-theory
19M05 Miscellaneous applications of K-theory
19M99 None of the above, but in this section

20-XX Group theory and generalizations

20-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
20-01 Instructional exposition (textbooks, tutorial papers, etc.)
20-02 Research exposition (monographs, survey articles)
20-03 Historical (must also be assigned at least one classification number from Section 01)
20-04 Explicit machine computation and programs (not the theory of computation or programming)
20-06 Proceedings, conferences, collections, etc.

20Axx Foundations
20A05 Axiomatics and elementary properties
20A10 Metamathematical considerations (For word problems, see 20F10)
20A15 Applications of logic to group theory
20A99 None of the above, but in this section

20Bxx Permutation groups
20B05 General theory for finite groups
20B07 General theory for infinite groups
20B10 Characterization theorems
20B15 Primitive groups
20B20 Multiply transitive finite groups
20B22 Multiply transitive infinite groups
20B25 Finite automorphism groups of algebraic, geometric, or combinatorial structures [See also 05Bxx, 12F10, 20G40, 20H30, 51-XX]
20B27 Infinite automorphism groups [See also 12F10]
20B30 Symmetric groups
20B35 Subgroups of symmetric groups
20B40 Computational methods
20B99 None of the above, but in this section

20Cxx Representation theory of groups [See also 19A22 (for representation rings and Burnside rings)]
20C05 Group rings of finite groups and their modules [See also 16S34]
20C07 Group rings of infinite groups and their modules [See also 16S34]
20C08 Hecke algebras and their representations
20C10 Integral representations of finite groups
20C11 p-adic representations of finite groups
20C12 Integral representations of infinite groups
20C15 Ordinary representations and characters
20C20 Modular representations and characters
20C25 Projective representations and multipliers
20C30 Representations of finite symmetric groups
20C32 Representations of infinite symmetric groups
20C33 Representations of finite groups of Lie type
20C34 Representations of sporadic groups
20C35 Applications of group representations to physics
20C40 Computational methods
20C99 None of the above, but in this section

51Fxx Metric geometry
51F05 Absolute planes
51F10 Absolute spaces
51F15 Reflection groups, reflection geometries [See also 20H10, 20H15; for Coxeter groups, see 20F55]
51F20 Congruence and orthogonality [See also 20H05]
51F25 Orthogonal and unitary groups [See also 20H05]
51F99 None of the above, but in this section

51Gxx Ordered geometries (ordered incidence structures, etc.)
51G05 Ordered geometries (ordered incidence structures, etc.)
51G99 None of the above, but in this section

51Hxx Topological geometry
51H05 General theory
51H10 Topological linear incidence structures
51H15 Topological nonlinear incidence structures
51H20 Topological geometries on manifolds [See also 57-XX]
51H25 Geometries with di erentiable structure [See also 53Cxx, 53C70]
51H30 Geometries with algebraic manifold structure [See also 14-XX]
51H99 None of the above, but in this section

51Jxx Incidence groups
51J05 General theory
51J10 Projective incidence groups
51J15 Kinematic spaces
51J20 Representation by near-fields and near-algebras [See also 12K05, 16Y30]
51J99 None of the above, but in this section

51Kxx Distance geometry
51K05 General theory
51K10 Synthetic di erential geometry
51K99 None of the above, but in this section

51Lxx Geometric order structures [See also 53C75]
51L05 Geometry of orders of nondi erentiable curves
51L10 Directly di erentiable curves
51L15 *n*-vertex theorems via direct methods
51L20 Geometry of orders of surfaces
51L99 None of the above, but in this section

51Mxx Real and complex geometry
51M04 Elementary problems in Euclidean geometries
51M05 Euclidean geometries (general) and generalizations
51M09 Elementary problems in hyperbolic and elliptic geometries
51M10 Hyperbolic and elliptic geometries (general) and generalizations
51M15 Geometric constructions
51M16 Inequalities and extremum problems (For convex problems, see 52A40)
51M20 Polyhedra and polytopes; regular figures, division of spaces [See also 51F15]
51M25 Length, area and volume [See also 26B15]
51M30 Line geometries and their generalizations [See also 53A25]
51M35 Synthetic treatment of fundamental manifolds in projective geometries (Grassmannians, Veronesians and their generalizations) [See also 14M15]
51M99 None of the above, but in this section

51Nxx Analytic and descriptive geometry
51N05 Descriptive geometry [See also 65D17, 68U07]
51N10 A ne analytic geometry
51N15 Projective analytic geometry
51N20 Euclidean analytic geometry
51N25 Analytic geometry with other transformation groups
51N30 Geometry of classical groups [See also 20Gxx, 14L35]
51N35 Questions of classical algebraic geometry [See also 14Nxx]
51N99 None of the above, but in this section

51Pxx Geometry and physics (should also be assigned at least one other classification number from Sections 70–86)
51P05 Geometry and physics (should also be assigned at least one other classification number from Sections 70–86)
51P99 None of the above, but in this section

52-XX Convex and discrete geometry

52-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
52-01 Instructional exposition (textbooks, tutorial papers, etc.)
52-02 Research exposition (monographs, survey articles)
52-03 Historical (must also be assigned at least one classification number from Section 01)
52-04 Explicit machine computation and programs (not the theory of computation or programming)
52-06 Proceedings, conferences, collections, etc.

52Axx General convexity
52A01 Axiomatic and generalized convexity
52A05 Convex sets without dimension restrictions
52A07 Convex sets in topological vector spaces [See also 46A55]
52A10 Convex sets in 2 dimensions (including convex curves) [See also 53A04]
52A15 Convex sets in 3 dimensions (including convex surfaces) [See also 53A05, 53C45]
52A20 Convex sets in n dimensions (including convex hypersurfaces) [See also 53A07, 53C45]
52A21 Finite-dimensional Banach spaces (including special norms, zonoids, etc.) [See also 46Bxx]
52A22 Random convex sets and integral geometry [See also 53C65, 60D05]
52A23 Asymptotic theory of convex bodies [See also 46B06]
52A27 Approximation by convex sets
52A30 Variants of convex sets (star-shaped, $(m;n)$-convex, etc.)
52A35 Helly-type theorems and geometric transversal theory
52A37 Other problems of combinatorial convexity
52A38 Length, area, volume [See also 26B15, 28A75, 49Q20]
52A39 Mixed volumes and related topics
52A40 Inequalities and extremum problems
52A41 Convex functions and convex programs [See also 26B25, 90C25]
52A55 Spherical and hyperbolic convexity
52A99 None of the above, but in this section

52Bxx Polytopes and polyhedra
52B05 Combinatorial properties (number of faces, shortest paths, etc.) [See also 05Cxx]
52B10 Three-dimensional polytopes
52B11 n-dimensional polytopes
52B12 Special polytopes (linear programming, centrally symmetric, etc.)
52B15 Symmetry properties of polytopes
52B20 Lattice polytopes (including relations with commutative algebra and algebraic geometry) [See also 06A11, 13F20, 13Hxx]
52B22 Shellability
52B35 Gale and other diagrams
52B40 Matroids (realizations in the context of convex polytopes, convexity in combinatorial structures, etc.) [See also 05B35, 52Cxx]
52B45 Dissections and valuations (Hilbert's third problem, etc.)
52B55 Computational aspects related to convexity (For computational geometry and algorithms, see 68Q25, 68U05; for numerical algorithms, see 65Yxx) [See also 68Uxx]
52B60 Isoperimetric problems for polytopes
52B70 Polyhedral manifolds
52B99 None of the above, but in this section

52Cxx Discrete geometry
52C05 Lattices and convex bodies in 2 dimensions [See also 11H06, 11H31, 11P21]
52C07 Lattices and convex bodies in n dimensions [See also 11H06, 11H31, 11P21]
52C10 Erdős problems and related topics of discrete geometry [See also 11Hxx]

52C15 Packing and covering in 2 dimensions [See also 05B40, 11H31]
52C17 Packing and covering in *n* dimensions [See also 05B40, 11H31]
52C20 Tilings in 2 dimensions [See also 05B45, 51M20]
52C22 Tilings in *n* dimensions [See also 05B45, 51M20]
52C23 Quasicrystals, aperiodic tilings
52C25 Rigidity and flexibility of structures [See also 70B15]
52C26 Circle packings and discrete conformal geometry
52C30 Planar arrangements of lines and pseudolines
52C35 Arrangements of points, flats, hyperplanes [See also 32S22]
52C40 Oriented matroids
52C45 Combinatorial complexity of geometric structures [See also 68U05]
52C99 None of the above, but in this section

53-XX Di erential geometry (For differential topology, see 57Rxx. For foundational questions of di erentiable manifolds, see 58Axx)

53-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
53-01 Instructional exposition (textbooks, tutorial papers, etc.)
53-02 Research exposition (monographs, survey articles)
53-03 Historical (must also be assigned at least one classification number from Section 01)
53-04 Explicit machine computation and programs (not the theory of computation or programming)
53-06 Proceedings, conferences, collections, etc.

53Axx Classical di erential geometry
53A04 Curves in Euclidean space
53A05 Surfaces in Euclidean space
53A07 Higher-dimensional and -codimensional surfaces in Euclidean *n*-space
53A10 Minimal surfaces, surfaces with prescribed mean curvature [See also 49Q05, 49Q10, 53C42]
53A15 A ne di erential geometry
53A17 Kinematics
53A20 Projective di erential geometry
53A25 Di erential line geometry
53A30 Conformal di erential geometry
53A35 Non-Euclidean di erential geometry
53A40 Other special di erential geometries
53A45 Vector and tensor analysis
53A55 Di erential invariants (local theory), geometric objects
53A60 Geometry of webs [See also 14C21, 20N05]
53A99 None of the above, but in this section

53Bxx Local di erential geometry
53B05 Linear and a ne connections
53B10 Projective connections
53B15 Other connections
53B20 Local Riemannian geometry
53B21 Methods of Riemannian geometry
53B25 Local submanifolds [See also 53C40]
53B30 Lorentz metrics, indefinite metrics
53B35 Hermitian and Kählerian structures [See also 32Cxx]
53B40 Finsler spaces and generalizations (areal metrics)
53B50 Applications to physics
53B99 None of the above, but in this section

53Cxx Global di erential geometry [See also 51H25, 58-XX; for related bundle theory, see 55Rxx, 57Rxx]
53C05 Connections, general theory
53C07 Special connections and metrics on vector bundles (Hermite-Einstein-Yang-Mills) [See also 32Q20]
53C08 Gerbes, di erential characters: di erential geometric aspects
53C10 *G*-structures
53C12 Foliations (di erential geometric aspects) [See also 57R30, 57R32]
53C15 General geometric structures on manifolds (almost complex, almost product structures, etc.)
53C17 Sub-Riemannian geometry
53C20 Global Riemannian geometry, including pinching [See also 31C12, 58B20]

65-XX Numerical analysis

65-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
65-01 Instructional exposition (textbooks, tutorial papers, etc.)
65-02 Research exposition (monographs, survey articles)
65-03 Historical (must also be assigned at least one classification number from Section 01)
65-04 Explicit machine computation and programs (not the theory of computation or programming)
65-05 Experimental papers
65-06 Proceedings, conferences, collections, etc.

65Axx Tables
65A05 Tables
65A99 None of the above, but in this section

65Bxx Acceleration of convergence
65B05 Extrapolation to the limit, deferred corrections
65B10 Summation of series
65B15 Euler-Maclaurin formula
65B99 None of the above, but in this section

65Cxx Probabilistic methods, simulation and stochastic di erential equations (For theoretical aspects, see 68U20 and 60H35)
65C05 Monte Carlo methods
65C10 Random number generation
65C20 Models, numerical methods [See also 68U20]
65C30 Stochastic di erential and integral equations
65C35 Stochastic particle methods [See also 82C80]
65C40 Computational Markov chains
65C50 Other computational problems in probability
65C60 Computational problems in statistics
65C99 None of the above, but in this section

65Dxx Numerical approximation and computational geometry (primarily algorithms) (For theory, see 41-XX and 68Uxx)
65D05 Interpolation
65D07 Splines
65D10 Smoothing, curve fitting
65D15 Algorithms for functional approximation
65D17 Computer aided design (modeling of curves and surfaces) [See also 68U07]
65D18 Computer graphics, image analysis, and computational geometry [See also 51N05, 68U05]
65D19 Computational issues in computer and robotic vision
65D20 Computation of special functions, construction of tables [See also 33F05]
65D25 Numerical di erentiation
65D30 Numerical integration
65D32 Quadrature and cubature formulas
65D99 None of the above, but in this section

65Exx Numerical methods in complex analysis (potential theory, etc.) (For numerical methods in conformal mapping, see also 30C30)
65E05 Numerical methods in complex analysis (potential theory, etc.) For numerical methods in conformal mapping, see also 30C30
65E99 None of the above, but in this section

65Fxx Numerical linear algebra
65F05 Direct methods for linear systems and matrix inversion
65F08 Preconditioners for iterative methods
65F10 Iterative methods for linear systems [See also 65N22]
65F15 Eigenvalues, eigenvectors
65F18 Inverse eigenvalue problems
65F20 Overdetermined systems, pseudoinverses
65F22 Ill-posedness, regularization
65F25 Orthogonalization
65F30 Other matrix algorithms
65F35 Matrix norms, conditioning, scaling [See also 15A12, 15A60]
65F40 Determinants

65F50 Sparse matrices
65F60 Matrix exponential and similar matrix functions
65F99 None of the above, but in this section

65Gxx Error analysis and interval analysis
65G20 Algorithms with automatic result verification
65G30 Interval and finite arithmetic
65G40 General methods in interval analysis
65G50 Roundo error
65G99 None of the above, but in this section

65Hxx Nonlinear algebraic or transcendental equations
65H04 Roots of polynomial equations
65H05 Single equations
65H10 Systems of equations
65H17 Eigenvalues, eigenvectors [See also 47Hxx, 47Jxx, 58C40, 58E07, 90C30]
65H20 Global methods, including homotopy approaches [See also 58C30, 90C30]
65H99 None of the above, but in this section

65Jxx Numerical analysis in abstract spaces
65J05 General theory
65J08 Abstract evolution equations
65J10 Equations with linear operators (do not use 65Fxx)
65J15 Equations with nonlinear operators (do not use 65Hxx)
65J20 Improperly posed problems; regularization
65J22 Inverse problems
65J99 None of the above, but in this section

65Kxx Mathematical programming, optimization and variational techniques
65K05 Mathematical programming methods [See also 90Cxx]
65K10 Optimization and variational techniques [See also 49Mxx, 93B40]
65K15 Numerical methods for variational inequalities and related problems
65K99 None of the above, but in this section

65Lxx Ordinary di erential equations
65L03 Functional-di erential equations
65L04 Sti equations
65L05 Initial value problems
65L06 Multistep, Runge-Kutta and extrapolation methods
65L07 Numerical investigation of stability of solutions
65L08 Improperly posed problems
65L09 Inverse problems
65L10 Boundary value problems
65L11 Singularly perturbed problems
65L12 Finite di erence methods
65L15 Eigenvalue problems
65L20 Stability and convergence of numerical methods
65L50 Mesh generation and refinement
65L60 Finite elements, Rayleigh-Ritz, Galerkin and collocation methods
65L70 Error bounds
65L80 Methods for di erential-algebraic equations
65L99 None of the above, but in this section

65Mxx Partial di erential equations, initial value and time-dependent initial-boundary value problems
65M06 Finite di erence methods
65M08 Finite volume methods
65M12 Stability and convergence of numerical methods
65M15 Error bounds
65M20 Method of lines
65M22 Solution of discretized equations [See also 65Fxx, 65Hxx]
65M25 Method of characteristics
65M30 Improperly posed problems
65M32 Inverse problems
65M38 Boundary element methods
65M50 Mesh generation and refinement
65M55 Multigrid methods; domain decomposition
65M60 Finite elements, Rayleigh-Ritz and Galerkin methods, finite methods
65M70 Spectral, collocation and related methods
65M75 Probabilistic methods, particle methods, etc.
65M80 Fundamental solutions, Green's function methods, etc.
65M85 Fictitious domain methods

65M99 None of the above, but in this section

65Nxx Partial di erential equations, boundary value problems
65N06 Finite di erence methods
65N08 Finite volume methods
65N12 Stability and convergence of numerical methods
65N15 Error bounds
65N20 Ill-posed problems
65N21 Inverse problems
65N22 Solution of discretized equations [See also 65Fxx, 65Hxx]
65N25 Eigenvalue problems
65N30 Finite elements, Rayleigh-Ritz and Galerkin methods, finite methods
65N35 Spectral, collocation and related methods
65N38 Boundary element methods
65N40 Method of lines
65N45 Method of contraction of the boundary
65N50 Mesh generation and refinement
65N55 Multigrid methods; domain decomposition
65N75 Probabilistic methods, particle methods, etc.
65N80 Fundamental solutions, Green's function methods, etc.
65N85 Fictitious domain methods
65N99 None of the above, but in this section

65Pxx Numerical problems in dynamical systems [See also 37Mxx]
65P10 Hamiltonian systems including symplectic integrators
65P20 Numerical chaos
65P30 Bifurcation problems
65P40 Nonlinear stabilities
65P99 None of the above, but in this section

65Qxx Di erence and functional equations, recurrence relations
65Q10 Di erence equations
65Q20 Functional equations
65Q30 Recurrence relations
65Q99 None of the above, but in this section

65Rxx Integral equations, integral transforms
65R10 Integral transforms
65R20 Integral equations
65R30 Improperly posed problems
65R32 Inverse problems
65R99 None of the above, but in this section

65Sxx Graphical methods
65S05 Graphical methods
65S99 None of the above, but in this section

65Txx Numerical methods in Fourier analysis
65T40 Trigonometric approximation and interpolation
65T50 Discrete and fast Fourier transforms
65T60 Wavelets
65T99 None of the above, but in this section

65Yxx Computer aspects of numerical algorithms
65Y04 Algorithms for computer arithmetic, etc. [See also 68M07]
65Y05 Parallel computation
65Y10 Algorithms for specific classes of architectures
65Y15 Packaged methods
65Y20 Complexity and performance of numerical algorithms [See also 68Q25]
65Y99 None of the above, but in this section

65Zxx Applications to physics
65Z05 Applications to physics
65Z99 None of the above, but in this section

68-XX Computer science (For papers involving machine computations and programs in a specific mathematical area, see Section –04 in that area)

68-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
68-01 Instructional exposition (textbooks, tutorial papers, etc.)
68-02 Research exposition (monographs, survey articles)
68-03 Historical (must also be assigned at least one classification number from Section 01)

68-04 Explicit machine computation and programs (not the theory of computation or programming)

68-06 Proceedings, conferences, collections, etc.

68Mxx Computer system organization

68M01 General

68M07 Mathematical problems of computer architecture

68M10 Network design and communication [See also 68R10, 90B18]

68M11 Internet topics [See also 68U35]

68M12 Network protocols

68M14 Distributed systems

68M15 Reliability, testing and fault tolerance [See also 94C12]

68M20 Performance evaluation; queueing; scheduling [See also 60K25, 90Bxx]

68M99 None of the above, but in this section

68Nxx Software

68N01 General

68N15 Programming languages

68N17 Logic programming

68N18 Functional programming and lambda calculus [See also 03B40]

68N19 Other programming techniques (object-oriented, sequential, concurrent, automatic, etc.)

68N20 Compilers and interpreters

68N25 Operating systems

68N30 Mathematical aspects of software engineering (specification, verification, metrics, requirements, etc.)

68N99 None of the above, but in this section

68Pxx Theory of data

68P01 General

68P05 Data structures

68P10 Searching and sorting

68P15 Database theory

68P20 Information storage and retrieval

68P25 Data encryption [See also 94A60, 81P94]

68P30 Coding and information theory (compaction, compression, models of communication, encoding schemes, etc.) [See also 94Axx]

68P99 None of the above, but in this section

68Qxx Theory of computing

68Q01 General

68Q05 Models of computation (Turing machines, etc.) [See also 03D10, 68Q12, 81P68]

68Q10 Modes of computation (nondeterministic, parallel, interactive, probabilistic, etc.) [See also 68Q85]

68Q12 Quantum algorithms and complexity [See also 68Q05, 81P68]

68Q15 Complexity classes (hierarchies, relations among complexity classes, etc.) [See also 03D15, 68Q17, 68Q19]

68Q17 Computational difficulty of problems (lower bounds, completeness, difficulty of approximation, etc.) [See also 68Q15]

68Q19 Descriptive complexity and finite models [See also 03C13]

68Q25 Analysis of algorithms and problem complexity [See also 68W40]

68Q30 Algorithmic information theory (Kolmogorov complexity, etc.) [See also 03D32]

68Q32 Computational learning theory [See also 68T05]

68Q42 Grammars and rewriting systems

68Q45 Formal languages and automata [See also 03D05, 68Q70, 94A45]

68Q55 Semantics [See also 03B70, 06B35, 18C50]

68Q60 Specification and verification (program logics, model checking, etc.) [See also 03B70]

68Q65 Abstract data types; algebraic specification [See also 18C50]

68Q70 Algebraic theory of languages and automata [See also 18B20, 20M35]

68Q80 Cellular automata [See also 37B15]

68Q85 Models and methods for concurrent and distributed computing (process algebras, bisimulation, transition nets, etc.)

68Q87 Probability in computer science (algorithm analysis, random structures, phase transitions, etc.) [See also 68W20, 68W40]

68Q99 None of the above, but in this section

68Rxx Discrete mathematics in relation to computer science

68R01 General

68R05 Combinatorics
68R10 Graph theory (including graph drawing) [See also 05Cxx, 90B10, 90B35, 90C35]
68R15 Combinatorics on words
68R99 None of the above, but in this section

68Txx Artificial intelligence
68T01 General
68T05 Learning and adaptive systems [See also 68Q32, 91E40]
68T10 Pattern recognition, speech recognition (For cluster analysis, see 62H30)
68T15 Theorem proving (deduction, resolution, etc.) [See also 03B35]
68T20 Problem solving (heuristics, search strategies, etc.)
68T27 Logic in artificial intelligence
68T30 Knowledge representation
68T35 Languages and software systems (knowledge-based systems, expert systems, etc.)
68T37 Reasoning under uncertainty
68T40 Robotics [See also 93C85]
68T42 Agent technology
68T45 Machine vision and scene understanding
68T50 Natural language processing [See also 03B65]
68T99 None of the above, but in this section

68Uxx Computing methodologies and applications
68U01 General
68U05 Computer graphics; computational geometry [See also 65D18]
68U07 Computer-aided design [See also 65D17]
68U10 Image processing
68U15 Text processing; mathematical typography
68U20 Simulation [See also 65Cxx]
68U35 Information systems (hypertext navigation, interfaces, decision support, etc.) [See also 68M11]
68U99 None of the above, but in this section

68Wxx Algorithms (For numerical algorithms, see 65-XX; for combinatorics and graph theory, see 05C85, 68Rxx)
68W01 General
68W05 Nonnumerical algorithms
68W10 Parallel algorithms
68W15 Distributed algorithms
68W20 Randomized algorithms
68W25 Approximation algorithms
68W27 Online algorithms
68W30 Symbolic computation and algebraic computation [See also 11Yxx, 12Y05, 13Pxx, 14Qxx, 16Z05, 17-08, 33F10]
68W32 Algorithms on strings
68W35 VLSI algorithms
68W40 Analysis of algorithms [See also 68Q25]
68W99 None of the above, but in this section

70-XX Mechanics of particles and systems (For relativistic mechanics, see 83A05 and 83C10; for statistical mechanics, see 82-XX)

70-00 General reference works (handbooks, dictionaries, bibliographies, etc.)
70-01 Instructional exposition (textbooks, tutorial papers, etc.)
70-02 Research exposition (monographs, survey articles)
70-03 Historical (must also be assigned at least one classification number from Section 01)
70-04 Explicit machine computation and programs (not the theory of computation or programming)
70-05 Experimental work
70-06 Proceedings, conferences, collections, etc.
70-08 Computational methods

70Axx Axiomatics, foundations
70A05 Axiomatics, foundations
70A99 None of the above, but in this section

70Bxx Kinematics [See also 53A17]
70B05 Kinematics of a particle
70B10 Kinematics of a rigid body
70B15 Mechanisms, robots [See also 68T40, 70Q05, 93C85]